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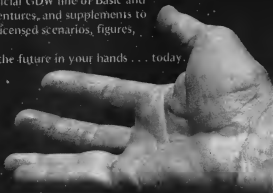
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UP FRONT

by Shawna McCarthy

As you may have noticed by now, there is a new name at the top of this page. Some of you may be familiar with it, and of course others of you may not. So, let me tell you a little bit about myself, and my plans for the magazine.

First of all, I've been working on *IAsfm* since June of 1978, originally as associate editor, then as managing editor, next as senior editor, and now, finally, as editor. This long association with the magazine has, of course, carved a place in my heart for *IAsfm*, and I'm thrilled and excited at the prospect of editing it myself.

This is all very well, you may be saying to yourselves, but what's she gonna do to our magazine! Well, first of all, this may be the last "Up Front" column you'll be seeing for a while. In the future, this column will appear only when I feel I have something important to say. Otherwise, I'd rather reserve at least one more page for fiction. Second of all, things will stay pretty much the same, only better. I think (I hope) that the days of radical change in *IAsfm* are past. Each month we'll give you lots of fiction, either a Profile or a Viewpoint (and for

those of you who have been complaining that these sections take up too much room, I'd like to remind you that in the past we *always* had a science fact article in each issue which frequently ran to 25 or 30 pages. The Profiles and Viewpoints are considerably shorter than that.), a terrific crossword puzzle (as an avid crossword puzzler myself, I can attest that they really are terrific), Mooney's Module, and all the rest of the departments and features we've had all along. We are also going to try out a two-page review of current SF-related and role-playing games. The first such column is in this issue, and I do hope to get your feedback on it.

Most important though, I hope to be able to present to you the absolute best in current science fiction and (yes, sometimes) fantasy. I have very wide-ranging tastes in fiction, and as a result, you can expect to see a broad spectrum of stories in the magazine—a good thing, I think, since it's as close as one can come to pleasing everybody.

As always, don't forget to write. Your opinions and comments mean a great deal. ●

EDITORIAL

WOMEN AND SCIENCE FICTION



by Isaac Asimov

My early science fiction stories had no women in them for the most part. There were two reasons for this; one social, one personal. The social reason first.

Prior to public recognition in the United States that babies are not brought by the stork, there was simply no sex in the science fiction magazines. This was not a matter of taste, it was a matter of custom that had the force of law. In most places, non-recognition of the existence of sex was treated as though it was the law, and for all I know, maybe it was indeed local law. In any case, words or actions that could bring a blush to the leathery cheek of the local censor were strictly out.

But if there's no sex, what do you do with female characters? They can't have passions and feelings. They can't participate on equal terms with male characters because that would introduce too many complications where some sort of sex might creep in. The best thing to do was to keep them around in the background, allowing them to scream in terror, to be caught

and then rescued, and, at the end, to smile prettily at the hero. (It can be done safely then because **THE END** is the universal rescue.)

Yet it must be admitted that science fiction magazines showed no guts whatever in fighting this situation. That brings us to the personal reason. In the 1930s and 1940s, the readership of the science fiction magazines was heavily (almost exclusively, in fact) masculine. What's more it was young-and-intellectual masculine. The stereotypical science fiction reader was a skinny kid with glasses and acne, introverted and scapegoated by the tough kids who surrounded him and were rightly suspicious of anyone who knew how to read.

It stands to reason these youngsters knew nothing about girls. By and large, I imagine they didn't dare approach them, and if they did, were rejected by them scornfully, and if they weren't, didn't know what to do next. So why on Earth should they want this strange sub-species in the stories they read?

They had not yet gotten out of the "I hate (translation: "I'm scared of . . .") girls" stage.

This is an exaggeration, perhaps, and no doubt there were a number of tough young men and girl-chasing young men who read science fiction, but by and large, I suspect it was the stereotypical "skinny intellectual" who wrote letters to the magazines and denounced any intrusion of femininity. I know. I wrote such letters myself. And in the days when I was reading and rating every science fiction story written, I routinely deducted many points for any intrusion of romance, however sanitized it might be.

At the time I wrote and sold my first few stories, I had not yet had a date with a young woman. I knew nothing about them except what I could guess by surreptitious glances from a distance. Naturally, there were no women in my stories.

(I once received a letter from a woman who denounced me for this lack. Humbly, I wrote back to explain the reason, stating that I was, very literally, an innocent as far as women were concerned at the beginning of my writing career. She had a good answer for that, too. She wrote back in letters of flame, "That's no excuse!")

But times change!

For one thing, society changed. The breath of liberty brought on by all the talk about

it during World War II weakened the censor, who retreated, muttering sourly under his breath. The coming of the Pill heralded the liberation of women from unwanted pregnancy, and marked the weakening of the double standard.

For another, people *will* grow up. Even *I* didn't remain innocent. I actually went out on a date on my twentieth birthday. I met a particular woman two years later, fell in love at first sight, and all trace of fear suddenly left me. I was married five months later and you'd be *surprised* how I changed! I have in my proud possession a plaque handed me by a science fiction convention. On the brass plate is inscribed that quality of mine that had earned me the plaque. It reads "Lovable Lecher."

And yet science fiction lagged a bit, I think. Old habits didn't change easily. My own stories, for instance, remained free of sex except where it was an integral part of the development and then only to that extent, and *still* so remain. I have gotten rid of my fear (witness my five volumes of naughty limericks), but not of my sense of decorum.

What, then, really brought on the change and brought science fiction more nearly into the mainstream of contemporary literature?

In my opinion, it was not chiefly social evolution; it was

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not the daring new writers; not the Russes and LeGuins.

It was the coming of women into the science fiction readership!

If science fiction readers had remained almost entirely masculine—even had the acne cleared up and the youth withered—I think science fiction would have remained male chauvinist in the crudest possible way.

Nowadays, I honestly think that at least a third, and possibly nearly half the science fiction readers are women. When that is so, and when it is recognized that women are at least as articulate as men and (these days) quite ready to denounce male chauvinism and to demand treatment as human beings, it becomes impossible to continue villainy.

Even *I* have to bow to the breath of decency. In my new novel, *Foundation's Edge*, of my seven central characters, four are women—all different, all perfectly able to take care of themselves, and all formidable. (For that matter, I introduced Susan Calvin in 1940, and she strode through a man's world, asking no quarter, and certainly giving none. —I just thought I'd mention that.)

And what brought in the women readers? I suppose there are a large number of reasons, but I have one that I favor. It's Mr. Spock's ears.

There is no question in my mind that the first example of decent science fiction that gained a mass following was the television show *Star Trek*, nearly twenty years ago. For a wonder, it attracted as many women as men. I don't suppose there is room to doubt that what chiefly served to attract those women was the unflappable Mr. Spock. And for some reason I won't pretend to guess at, they were intrigued by his ears.

Very few of the "Trekkies" leaked over into print science fiction (or all the magazines would have grown rich), but a minor percentage did and that was enough to feminize the readership of the science fiction magazines. And I think that was all to the good, too.

With so many women thumbing the magazines, women writers were naturally more welcome and their viewpoints greeted with greater reader-sympathy—and women editors made more sense, too.

Don't get me wrong. There were women writers even in the early days of magazine science fiction, and women editors, too. When I was young, some of my favorite stories were by A. R. Long and by Leslie F. Stone. I didn't know they were women, but they were. In addition, Mary Gnaedinger, Bea Mahaffey, and Cele Goldsmith were excellent editors. I never met Ms. Gnae-

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dinger, but I did meet Bea and Cele and I hereby testify that in addition to lots of brains, character, and personality, they each happened to be beautiful. (Irrelevant, I know, but I thought I would mention it.)

Consequently, when George Scithers left us, I found it delightful that Kathleen Moloney agreed to be the new editor. It never occurred to me for an instant that a woman couldn't handle the job just because she was a woman and, as a matter of fact, Kathleen took to it with a kind of rabid delight. She in-

troduced interesting changes and stamped her personality on the magazine.

But then, there came along the all-too-frequent villain in such cases, the offer-one-can't-refuse. It may have been Kathleen's performance here that aroused interest in other publishing houses and—well, one can't turn down a chance to advance in one's chosen profession, so we lost Kathleen.

And yet all is not lost, either. I have on numerous occasions mentioned the charming Shawna McCarthy, who is as sharp as a scalpel, and who is

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universally liked for the excellent reason that she is universally likable. *I like her.*

Shawna served faithfully as right-hand person first to George, and then to Kathleen. In the process, she learned every facet of the editing business, and developed (thank goodness)

the ambition to hold the top position.

So when Kathleen left, I said, "It has to be Shawna" and everyone agreed with me, especially Shawna.

And here she is. Readers—female and male—I give you Shawna! ●

MISSING THE BOAT

Report One

(From the August 1982 "Missing the Boat" contest)

Not surprisingly, the Big Three were tabbed.

Robert Heinlein was called three times. Harry W. Hickey of Arlington, Virginia, points out that in *Starman Jones* (1953) computers of the future were condemned to the use of binary digits only. Conversion into ordinary numbers (no problem) was missed. In *The Man Who Sold the Moon* (1949), Leo Doroschenko of West Orange, New Jersey, points out, Heinlein talks about the possibility of carrying television equipment to the moon, but dismissed it as being too heavy to carry. He didn't foresee miniaturization. And Jane Pilson of Ridgeway, Virginia, reports that in *The Rolling Stones* (1952), Heinlein describes Earth from space as appearing green. Actually, we're looking down on blue sky with white clouds, and we see blue and white.

Arthur C. Clarke in his short story *Superiority* (1951), talks about a huge computer of the future and describes it as having nearly a million vacuum tubes, says Ross L. Mattis of Smithfield, Rhode Island, and this three years after the invention of the transistor. Arthur didn't foresee transistorization.

As for me, R. J. Lesch of Rockford, Illinois points out that in *I, Robot* (1950), I have a reporter surreptitiously taking down notes on a mechanical writer hidden in a pocket and run by fingers. Apparently, even in 1950, I had never heard of a sound-recorder and couldn't imagine one.

Chuck Matlack of Levittown, Pennsylvania, refers to Walter M. Miller, Jr.'s short story, *Conditionally Human* (1952), which deals with a form of genetic engineering produced by firing alpha-particles at genes. Miller missed the use of enzymatic cut-and-splice which is what is actually developing. And Dan Washy of Gowanda, New York, refers back to Victor Appleton's *Tom Swift and his Photo Telephone* (1933). Tom Swift deals with photographic stills in connection with telephones. By 1933, Appleton might have predicted motion-picture effects.

GAMING

by Dana Lombardy

Update on Role-Playing Games

If the player's character survives the adventure, he earns "experience" points that increase his character's abilities for use in future games.

While this may sound simple in concept, it's very complex in action. There are literally hundreds of options facing the players in an average adventure—what path to take, what signs or contacts to trust, when to fight, when to negotiate, when to run, etc.

Most important, if the players don't cooperate with one another during the game, their characters will probably not survive the adventure and be available for future use. You don't play against the other players in the game, the *group* plays against the problems and dilemmas they come upon as described by the GM.

Since the rules for most rpgs run into hundreds of pages, and include complex charts and tables, it requires a high degree of dedication and intelligence to be an effective GM.

Fortunately, the players don't have to memorize the rules in

order to participate. Only the GM need know everything. With little or no prior knowledge, you can sit in on a game with an experienced GM and play effectively the first time.

Here are a few of the many selections available in the rpg category.

Fantasy Role-Playing Games. *Dungeons & Dragons*® (TSR, Hobbies Inc., Box 756, Lake Geneva, WI 53147) is responsible not only for fantasy rpg, but was the impetus for all the different types of rpgs to follow. *D&D*® is still the most popular game, and comes in several editions, including basic, expert, and advanced. Nearly all of the dozen different fantasy rpg available involved hunting for treasure, using magic and force to overcome the monsters guarding the treasure—dragons, orcs, trolls, demons, etc. One of the newest entries is *Call of Cthulhu* (Chaosium Inc., Box 6302, Albany, CA 94706), which is drawn from the gothic horror novels by H. P. Lovecraft.

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as September of 1981, *Isaac Asimov's Science Fiction Magazine* ran a series of six articles by John M. Ford about role-playing and board games. As John noted in his first essay in the April 1979 issue: "Five years ago, there were essentially *no* professionally published SF games; now there are dozens, and more being announced every day."

Today, these "dozens" have multiplied into a substantial library of games, including video and computer types that use SF and fantasy themes in their designs.

This article is an update on the category of role-playing games that you, as an SF reader, may find interesting. But before launching into a survey, a note of

explanation about these games is in order.

Role-playing games (rpg) are a relatively new type of game first introduced in 1975 with *Dungeons & Dragons*® by TSR Hobbies Inc. of Lake Geneva, Wisconsin. Unlike games that use a board and playing pieces, or require dice and a large dose of luck, role-playing games require no board, no playing pieces, and are open-ended in play.

A typical rpg calls for two or more players and a referee—often called a gamemaster or, in fantasy games, a dungeonmaster. The gamemaster (GM) doesn't play in the game. Instead, he explains the situation and tells the players what they see, hear, and even smell in the adventure. The

scene is constantly changing, so the GM is kept quite busy.

The players, for their part, act as specific characters, each with individual strengths and weaknesses. These are determined by rolling dice before actually starting game play. Whether a wizard, warrior, alien, or starship captain, the characters must use their dice-acquired "intelligence," "stamina," "dexterity," "strength," "charisma," etc. as each new situation in the game requires.

Science Fiction RPG. This may soon become the largest category of role-playing games. *Traveller*® (Game Designers' Workshop, Box 1646, Bloomington, IL 61701) is the most popular in this category. It, along with the other half-dozen games dealing with outer space, postulates that mankind has conquered the stars, and travel from one stellar system to another is commonplace. Players can build starships, design entire worlds, and even play alien characters in most SF rpg. Within this category are several other

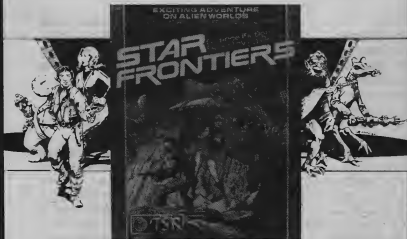
types of SF ethos, including *Car Wars* (Steve Jackson Games, Box 18957, Austin, TX 78760). As its name implies, driving offensively is a desired trait on the freeways of the future—the right of way goes to the biggest guns. Gentlemen, choose your weapons...er...cars. In a more serious vein, *Aftermath* (Fantasy Games Unlimited) and *Gamma World* (TSR Hobbies Inc.) both deal with the near future on a post-holocaust earth. Fragmented technology and ancient skills are used by semi-tribal groups to gain control of what's left intact.

Most of these games are available at local game or hobby stores. Some book, toy and department stores may also carry a few of these titles. ●

Dana Lombardy published a fan magazine on adventure games in the early seventies, and has designed over a dozen published games, most on historical subjects. Currently, he is the associate publisher of a trade magazine serving the game industry.



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ON BOOKS

by Baird Searles

Manshape

By John Brunner

DAW Books, \$2.25 (paper)

John Brunner's particularly outstanding characteristic, over what is now becoming a lengthy career of writing SF, has been his sheer intelligence. Even his early semi-space operas were not exactly dumb books, and when the field was allowed to aim for intellectuality in the 1960s, his reputation was established with some BIG books (*Stand On Zanzibar*, et al.) which handled some BIG themes—and handled them well.

Since then, Brunner has worked smaller, which does not necessarily mean slighter. His recent novel *Manshape* is a case in point.

It is a "situation" novel, with several major characters but no hero *per se*. The situation is this: in a fairly distant future (no exact date given), Earth has re-established contact with some 40 worlds which had been colonized centuries before. Interstellar travel being difficult and expensive, relations with the colonies had been sporadic to

the point of nonexistence until the creation of the Bridge System, a web of matter transmitters connecting the various worlds and the ships that are now scouting for other "lost" colonies to tie into the System.

Two such have just been discovered, and negotiations are in progress for them to accept Bridges. One is Ipewell, a singularly unpleasant matriarchy; the other is Azrael. Azrael is well-named (for the Angel of Death); its culture, due to a harsh and unyielding environment, is necrocentric—death is something to be sought. When a representative of Earth is killed there, the leaders of the Bridge System (who are essentially the leaders of Earth) begin to wonder what will happen if they introduce Azrael's culture to the population of Earth which is jaded to the point of adopting any new cult or novelty that comes along.

Brunner sets his scene and his situation and then plays it through with startling economy and—yes—intelligence. He doesn't beg the big philosophical questions, such as the

meaning or meaninglessness of life for an advanced culture—or for his characters, for that matter, who have more depth than we're used to. Thorkild, the head of the Bridge System, is teetering on the edge of a breakdown, and slips entirely when confronted with Azrael. Hans, the young pantologist (a mental mutation that can assimilate and conclude faster than computers, a result of "evolutionary overdrive" as he puts it), attempts to cope with and analyze the culture of Azrael. Alida, supervisor of Inter-world Relations, is seventy-looking-thirty, and is involved with both men.

These characters are many-faceted, more human and therefore paradoxically more elusive than the simpler characters one gets all too often in SF.

Manshape is a very short novel. On one hand, it might be wished that Brunner had taken more length to develop these people, these ideas, and these cultures (Ipewell, the matriarchy, is splendidly evoked and then practically discarded). On the other, in this day of epic trilogies, it's a pleasure to come across a succinct work that is not merely a throwaway space adventure.

Clique

By Nicholas Yermakov
Berkley, \$2.50 (paper)

If I didn't know that Nicholas Yermakov was a young man, I would have guessed from *Clique* that he was a fiftyish mainstream writer taking a crack at science fiction. What he's given us here is a sort of mid-century corporation novel (or anti-corporation novel) like *The Man In the Gray Flannel Suit* with some touches of *Elmer Gantry*, built around a single speculative concept.

As such, it's not bad. Ross Cleary is head advertising honcho for a large and powerful company that manufactures Auras. Auras are holographic illusions that cover the entire body, so that you can appear as anybody from Beau Brummel to Cro-Magnon man, or anything, from a cloudburst to a sunset. While they have been adopted so enthusiastically by the public that it's considered slightly obscene to appear without one, they aren't quite perfect since the "wearer" can be seen through the holograph.

When Ross's company perfects an Aura that conveys a perfect illusion, he suffers a *crise de conscience* on realizing the moral and social implications. He quits his job, and more or less by accident, starts a Society for Truth in Appearance which comes to such a position of power that, as is usual in this sort of story, Ross finds himself, in a way, back where he started.

This is all told more or less

in and around the conflict between Ross and the head of the company, Andy Thornton. Both characters are neatly drawn as individuals, as are the various other characters who get drawn into the battle.

The main problem with *Clique* as a science fiction novel is that, aside from the concept of the Auras, Yermakov has given us little that is science fictional. He notes that the Auras had first come into use 75 years ago, which places the story close to a century in the future, but you'd never guess it from the background we're given; there's none of the meticulous working out of a future milieu that a Delany or Bester would have done. Business seems to be carried on as it was in the 1950s, and Yermakov's idea of the social life of the rich might appear to be drawn from '30s movies—I expected a weekend house party on Long Island at any moment.

In short, a readable novel sabotaged by lack of any feeling for the future.

The Elfin Ship

By James P. Blaylock
Del Rey, \$2.75 (paper)

In fantasy, the line between juvenile and adult literature is particularly hard to draw—we all know "children's books" that are touching and absorbing to adults, and adult fantasies that any self-respecting fourth grader would find mindless. And when

it gets into whimsy, it gets even trickier. *The Wind In the Willows* is a deserved classic, but it takes some sort of genius (usually a British genius) to pull off that kind of cuteness without the reader needing a good dose of Pepto Bismal.

James P. Blaylock's *The Elfin Ship* has all the ingredients to make me head for the medicine chest. Its hero is a cheesemaker named Jonathan Bing who lives in a wee little burg called Twombly Town. There's trouble down the river, and Jonathan must make an expedition by raft to trade cheeses for honeycakes and elfin goodies for the kiddies for Christmas.

With him goes Professor Wurzle, Twombly Town's resident pedant; Jonathan's dog, Ahab; and the village idiot, a young man named (urgh) Dooley. On their way to the elf town of Seaside, at the mouth of the river, they have assorted adventures with goblins, elfin flying ships and, finally arrived at their destination, are entrusted with a mission by the Man in the Moon. . . .

I can't go on. It sounds too awful. If I say any more, nobody at all would want to read this book. And yet, doubting my sanity all the way, I sailed through it pleased, chuckling, and eager to find out what would happen next.

Now you want me to justify

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that statement, I suppose. Couldn't you take my word for it, just once? Because I'm not sure I can. Oh, despite the sometimes awkward writing, plotting, and nomenclature, I could cite the constant stream of odd events and inventions—the platypuses that crop up along the river, the pocket watch which stops time, but not for everybody, the green powder which, accidentally spilled into a fire, brings out an unstoppable stream of animated skeletons.

And I could say that every once in a while, Blaylock will come up with a startlingly good descriptive phrase, such as the one about a traveller chance met on the river—"The man appeared to be waiting for an opportunity to go mad—just the sort of person who is best left alone."

And I might add that even with all the cuteness, it's not a children's book. For one thing, there's the length—it's well over 300 pages. For another, there are underlying currents which simply aren't childish; the goblins, for instance, have a quality of malicious, mindless nastiness that is more unnerving than the evil of an arch-criminal.

And it should be noted, not necessarily as a plus factor, but simply as another of the more bizarre aspects of the novel, that in all its length there is not

one female character.

But I can't really just come out and say this is a good book. However, it is an antic, original, slightly mad, and inventive piece of work. Mr. Blaylock is indeed no Kenneth Grahame; he is a James Blaylock, which, given my poor attempt above, seems to be indescribable.

Triplanetary, First Lensman, Galactic Patrol, Gray Lensman, Second Stage Lensman, & Children of the Lens

By E.E. "Doc" Smith
Berkley, \$2.50 each (paper)

"Two thousand or so million years ago two galaxies were colliding; or, rather, were passing through each other."

That opening is as famous in printed SF as "A long time ago in a galaxy far, far away..." is in film. It is the first sentence of *Triplanetary*, the first book in the classic "Lensman" series. The six volumes are finally all available in a new, uniform paperback edition with handsome, appropriate covers—an occasion to take a look at this cornerstone of American science fiction.

The history of the six books is too complex to detail here; simply say that they were published, for the most part, in *Astounding Science Fiction* magazine (now *Analog*) between 1934 and 1947, later to be exten-

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sively revised and added to for book publication. They are universally acknowledged to be the epitome of space opera, practically in one step taking SF from nervously poking around the solar system, to leaping between galaxies and tossing planets around like lights on a Space Invaders screen. (Those games owe a lot to Doc Smith.) Add a cosmic view of time and space to all this pell-mell adventure, and one can accept Smith as the formative author of SF as we know it.

In *Triplanetary*, the stage is set for the universe-wide war between the two super races, the wise and beneficent Arisians and the vicious, malignant Eddorians, which will extend from the beginnings of life in our galaxy (as set in motion in that opening sentence) well into the future. We see the influence of that war on the history of Earth (Tellus, in Smith's nomenclature), in Atlantis, Rome, the near future, and the interplanetary period (space pirates from every direction!). And, as we do, we follow two human genetic lines, artfully manipulated by the Arisians, which will eventually result in something spectacular five books from now.

The *First Lensman* is Virgil Samms, who is given the first lens by Arisia. The lens is a crystal, mentally attuned only

to its wearer, which gives him (and eventually her—female "lensmen" appear in time) extraordinary powers of communication and mental force. Samms forms the Galactic Patrol, the upper echelon of which is lensmen, including nonhuman races from the myriad inhabited planets of the Galaxy. (We are now in the interstellar period, the inertialess drive having been invented in a sentence or two in *Triplanetary*.)

Galactic Patrol, *Gray Lensman*, and *Second Stage Lensman* chronicle the career of Kimball Kinnison, end product of one of the human lines we've been following, and the most super-duper lensman yet. The Arisians and the Eddorians (remember them) engage in a sort of "anything-you-can-do-I-can-do-better" conflict across two galaxies and millions of planets, with the Arisians backing the Galactic Patrol as the defender of Civilization (with a capital C) and the Eddorians countering with Boskone, the general label for all, from tyrants to drug pushers, that is anti-Civilization. The Patrol comes up with a superweapon that focuses the energy of a star; Boskone retaliates with attacks through hyper-spatial tubes. Kinnison is in the thick of it, advancing from lensman *ordinaire*, to Gray Lensman, to Second Stage Lensman, of which there are only three others in

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the two galaxies. (Those three are nonhumans.)

Somewhere along the way, he encounters Clarissa MacDougall, who is—you guessed it—the end of the other line so patiently nurtured by the Arisians. Luckily, they like each other; Clarissa gets to be the *Red Lensman* (Lensperson sounds silly), and, at the end of volume five, Boskone seems ended forever and Kim and Clarissa marry to live happily and unadventurously ever after.

No way. Eddore is still alive and well, and in twenty years, Boskone is stirring up more trouble than ever. But after five volumes of "Can you top this?" Smith does—with two sets of unidentical twin girls and their brother, the *Children of the Lens*: Kathryn, Karen, Camilla, Constance, and Christopher Kinnison, each more powerful than any Arisian.

As Eddore unveils the most unspeakable planet of all, the dreaded Ploor, each of the girls teams up with one of the Second Stage Lensman, and with Kit coordinating, the climactic battle is joined. It's Kit, Kat, Kay, Cam, and Con vs. Ploor—what a finale!

If all this sounds like it's too much, it is. But I reread the entire series for this review, and I had one hell of a good time. The novels are naïve, often chauvinistic (male and human) despite valiant attempts not to

be, simplistic, and sometimes downright silly. Characterization is usually limited to a couple of adjectives (usually "brave" and "handsome"). Alien psychology and sociology are on about the level of the inscrutability of the Oriental.

But if you think the *Lensman* series is an easy read, forget it. The style is primitive, and one comes across wonderful sentences such as "This is the first time Kinnison had ever been really badly wounded, and it made him sick." But Smith gets more into a single paragraph than most writers get into a chapter. It was the speedy pulp method, of course, to pack as much action as possible into the shortest space, but Smith takes it into hyperdrive. Accidentally skip a paragraph, and you might well have missed the introduction of a major character or a ten-thousand ship battle that will yet again decide the fate of Civilization.

One finishes the series with the mind reeling with human characters, alien characters, planets, suns, races, battles, fleets, superweapons, superpowers, and cosmic distances. This review has been an exercise in trying to stuff a redwood tree into a paper bag; I'd need the whole issue to get across the characters, events, and concepts of the *Lensman* series. Simple they may be, but simple-minded they're not. Smith

deserves his place in the pantheon of science fiction.

Lensman From Rigel

By David A. Kyle

Bantam, \$2.50 (paper)

And what should arrive while I was in the middle of all that but a *new* Lensman book. *Lensman From Rigel* is the second of David Kyle's authorized spinoffs to be devoted to one of the three non-human Second Stage Lensmen. This one is an adventure of Tregonsee, the stolid and elephantine Rigelian.

It stood up well to the acid test of being read just after the originals; Kyle gets just enough of Smith's style, while not being slavishly imitative or trying to outdo the master. He doesn't have the pace, but maybe no one in this day and age could; there are, though, the wonderful Smithic throwaways such as "The cost can be held down to a few million planets." There are some nice original ideas, too, well-integrated into the Old Master's universe.

I think Lensfans will look kindly on it. ●



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MONORAILS ON MARS

Around 1900, the American astronomer Percival Lowell wrote three popular books about Mars and its canals. They contained detailed maps showing networks of lines on Mars which Lowell thought he had observed through his telescope on Mars Hill, in Flagstaff, Arizona.

In 2049 the famous California parapsychologist, Dr. Harold Backoff, published a controversial paper in the *International Journal of Precognition*. Perhaps, Dr. Backoff suggested, Lowell was not as self-deluded as most astronomers assumed. Could it be that Lowell was a psychic with strong precognitive powers? Was he observing Mars as it would appear 150 years in the future?

Dr. Backoff based his theory on the fact that by 2049 Mars was indeed crisscrossed by hundreds of lines, most of them straight, that resembled the lines on Lowell's maps. They were not water canals, as Lowell mistakenly assumed, but transportation monorails built to connect the bases that had been established on Mars by U.S. and U.S.S.R. explorers.

Mars has a diameter of about 4,200 miles. The first three bases constructed by American engineers were named Asimov, Bradbury, and Clarke. Call them ABC.

B and C are each 6,000 miles from A. Which base, A or B, is the nearest to C? This is an easy question, answered on page 77.



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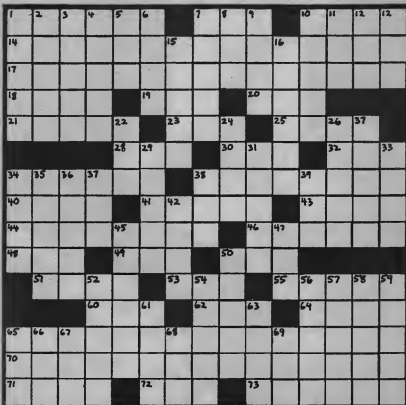
- 1 Have at
- 7 Closest star
- 10 Snakes
- 14 Jovian beauty mark?
- 17 "A _____," Jupiter Award novel by 16 Down
- 18 Storied tentmaker
- 19 Hit the gas
- 20 Jose's uncle
- 21 Seacoast nightmare
- 23 _____ Worlds, British SF magazine
- 25 Chinese character popularized by Lon Chaney Sr.
- 28 Eggs
- 30 "Lives _____ Bengal Lancer"
- 32 Old musical note
- 34 James Blish tale about life on Jupiter
- 38 Ben Bova's "As On A _____ Plain"
- 40 Descartes
- 41 _____ saurus, "The Beast from 20,000 Fathoms"
- 43 Dies _____
- 44 Isaac Asimov story about Jupiter
- 46 Darn fool?
- 48 Name in hockey lore
- 49 Saturated
- 50 "I _____ You," Jupiter Award story by Damon Knight
- 51 Great desert
- 53 Transgression
- 55 Green lunch
- 60 George Lucas' effects company: inits.
- 62 Blake Edwards film
- 64 Forget it
- 65 Joel R. Peabody novel about Jupiter

- 70 Jupiter Award novel by Ursula K. Le Guin
- 71 Craggy Hills
- 72 All time, in poetry
- 73 Club or stick: Fr.

DOWN

- 1 A Musketeer
- 2 A Stooge
- 3 Sultan's palace
- 4 Maternity ward cry
- 5 N.Y. subway
- 6 King or Norman
- 7 Canyon of the comics
- 8 Gold: Sp.
- 9 Drill sergeant's refrain
- 10 John Jacob _____, author of "A Journey in Other Worlds" (a Jupiter Novel)
- 11 Work-out parlor
- 12 _____ favor
- 13 Cityways, abbr.
- 15 Booster rocket
- 16 Clifford _____
- 22 "Captain's _____"
- 24 Mustard plant
- 26 _____ Tales, magazine begun in 1923
- 27 Arm bones
- 29 SF pioneer
- 31 Town and river in Somerset, England
- 33 Cheese agent?
- 34 Czech city
- 35 Changed: abbr.
- 36 First words, for short
- 37 Crossword clue, for short
- 38 Lester _____ Rey
- 39 SF's Carter
- 42 Bartholomew Cubbins' bounty

- 45 "_____ Will...For Now," Elliott Gould/Diane Keaton film of 1976
 47 "Doc" of SF: inits.
 50 "The _____ of Ganymede," Poul Anderson
 52 "Where Late the Sweet _____ Sang," Jupiter Award novel by Kate Wilhelm
 54 "S _____ Space," Ray Bradbury
 56 Words before "to bed"
 57 Very fertile loam
 58 After: Fr.
 59 From: Sp.
 61 Wares: abbr.
 63 Type of pear
 65 Utility conglom.
 66 "_____ Goes There?"; John W. Campbell classic
 67 Above, poetically
 68 Early Ron Howard role, informally
 69 Saul's uncle, in the Bible





VIEWPOINT

GREATER REALITIES

OR HOW TO WRITE SCIENCE FICTION WITHOUT KNOWING MUCH ABOUT SCIENCE

art: Val Lakey

The author is probably best known for his work as an editor

(Ace Books, Ace Specials, *Universe*), anthologist (*The Best Science Fiction of the Year*), and fiction writer (*Cirque*, 1977). Here, however, he demonstrates his skill as an essayist.

Terry Carr

You write science fiction?" said a New York cabbie to me recently. "Hey, you must know all that stuff about physics and space travel and all. Lemme ask you—"

"I don't really know much about science," I said nervously, preoccupied at that moment in a time-and-motion analysis of the traffic around us, specifically whether or not

VIEWPOINT



♥♥ I do read things other than science fiction, including magazines such as *Scientific American* and *Science*, and books on popular science. I collect reference books on everything from paleoanthropology to quasars. ♥♥

we'd be able to complete the left turn he'd just started in front of an oncoming truck.

We made it with eyelashes to spare. The cabbie said, "Well, the thing is, I've been wondering about some of this Erik von Daniken stuff. . . . Yeah, I know everybody says he's a fraud, but how can you explain that Egyptian scientist who figured out the circumference of the Earth when most people still thought it was flat?"

The cabbie cut off a bus and made it through a light that hadn't quite completed its red shift. I tried to concentrate on the conversation.

"Actually I think he was a Greek, but he did work it out to within 1% or so," I said, and went on to explain how measuring the lengths of shadows cast by poles of identical lengths hundreds of miles apart latitudinally at the same time of day had enabled that ancient geometer to determine the curvature of the Earth and extrapolate from that.

"And you claim you don't know about science?" said the cabbie.

"Well," I said, "I think I read

that in an Isaac Asimov column." And I realized that at least I do maintain a layman's interest in science and research. Anybody who's interested in science fiction undoubtedly does; that's why the SF magazines have so frequently featured articles and columns about science—by Asimov, de Camp, Willy Ley, Jerry Pournelle, or Avram Davidson's delightful exegeses of forgotten lore.

Besides, most science fiction writers know a lot of their fellow writers, and a number of SF fans too—and among those writers and readers are quite a few people who do know a lot about this or that branch of science. Some of them are working scientists themselves. Conversations at science fiction parties aren't usually about the intricacies of science—more often they're about book advances, football, or sex—but science is one of our common interests and the subject does come up. I can remember chatting with friends in the past few months about the Alvarez theory that the dinosaurs died as a result of a gigantic meteorite

strike, about research into the workings of amphibian ears, and about a new translation of Freud's basic writings that sheds light on some interesting misconceptions about his work.

And of course I do read things other than science fiction, including magazines such as *Scientific American* and *Science*, and books on popular science. Like most SF writers, I collect reference books on everything from paleoanthropology to quasars; when ideas for stories come to me it's not unthinkable to look up some facts, as I did for "The Winds at Starmont," a novella about individual human flight on a low-gravity planet. For that story I read a book on the history of flight, consulted a translation of da Vinci's notebooks, and a few other things.

Owning your own library isn't really necessary, though. When I wrote a story called "Brown Robert" I based it on the realization that time travel would be impractical (even if paradoxes could somehow be prevented) because a time traveler who hopped a hundred years or even a minute into the future

VIEWPOINT

or past would appear not on Earth but somewhere in space. My story included the data that "... the Earth moved around the sun at about eighteen and a half miles a second and for that matter the whole solar system seemed to be moving at about twelve miles a second toward a point in the constellation Hercules."

That's not the sort of detail you might expect from a writer who knows little about science, especially considering that when I wrote the story I'd just moved and didn't have any reference books with me. But there was a public library only a few blocks away, so I went there to look up the information.

For another story I wrote about the same time, I needed to know how long ago Cro-Magnon man first developed. In that case I went to the phone and called the Museum of Natural History . . . which led to a peculiar conversation, as the switchboard operator tried to determine which curator she should ring for me. When I told her my specific question, she said brightly, "Oh, then I'll switch you to our Cro-Magnon

man." I thought this was a wonderful way of getting right to the source.

Sometimes I've relied on friends for scientific information. When I wrote "The Dance of the Changer and the Three," I had to invent a planet containing quantities of rare elements that would make it an attractive site for expensive and dangerous mining operations. I postulated a gas-giant with a solid core and a "surface" of howling winds and swirling seas of molten elements and compounds. But before I submitted the story, I showed my draft to Poul Anderson, who knows much more about planet-building than I do; he made a couple of suggestions and I incorporated them into the final version.

These are rather obvious ways of making the science in a story more authentic, and they're frequently used by people writing stories about subjects with which they're not too familiar. But any of these methods will take time in addition to that you devote to the writing itself, and a certain amount of good

fortune: not everyone will have a friend nearby who'll be able and willing to check a story's facts, for instance. For writers who don't have such friends, or who don't know just where to look things up quickly, there's an alternative: leave the science out.

That may sound like heresy, but let's take a look at the nature of science fiction. There are all sorts of definitions, ranging from those that call for rigid extrapolations of scientific knowledge to those that scarcely differentiate science fiction from fantasy—often the term "speculative fiction" is substituted in these latter. Robert A. Heinlein coined that term over forty years ago, and though he's usually considered a "hard science" writer he's sometimes taken liberties like writing about time travel and faster-than-light drives, neither of which is very congruent with current scientific concepts.

But we all accept these devices, don't we? After all, they provide opportunities for fascinating stories, and that's really the bottom line. When we read

(or write) tales of visiting ancient Galilee or star federations uncomplicated by distance we accept these apparent impossibilities without a qualm; we tell ourselves that maybe sometimes people will figure out ways to make the impossible possible.

That's certainly been done many times before—one era's "fact" can become naïve fancy to scientists with further knowledge. Today we know that heavier-than-air machines can fly, that living bodies contain almost invisible organisms that may be parasites or symbiotes, that our planet is *not* perfectly spherical nor are its magnetic poles the same as its geographic ones. There are more ringed planets than were dreamt in our philosophy scant years ago, and Venus isn't a jungle planet anymore.

Such changes in scientific knowledge have turned stories that were perfectly acceptable as science fiction when they were written into obvious fantasies today, without a word of them having been changed. Their status is in the eyes of the readers and the accepted facts

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of the time when the stories are read. People were willing to believe Jules Verne's method of sending a spaceship to the Moon by firing it out of a cannon, and Ray Cummings's concept of atoms whose orbiting particles were entire planets in micro-miniature was acceptable as startling speculation. Today we know them to be impossible.

Conversely, telepathy and telekinesis were considered fantastic concepts in the early decades of this century, but more recent research into the abilities of the human mind suggests that such powers may not be totally impossible after all. I've even read a serious paper by a psychiatrist who included, in his interpretation of patients' dreams, the assumption that some of them might be precognitive, complete with traumas from the future. An interesting story could be fashioned around that notion.

Does all this mean that science fiction writers should feel free to play fast and loose with scientific knowledge, on the theory that everything that's considered true today is likely



“When we read or write tales of visiting ancient Gallilee or star federations uncomplicated by distance, we accept these apparent impossibilities without a qualm; we tell ourselves that maybe sometime people will figure out ways to make the impossible possible.”

to turn out to be nonsense in a few decades? Certainly not. For the key to science fiction writing is the author's ability to convince readers, at least for the duration of a story, that the events described could logically happen, and believable extrapolations must start from current concepts.

Arctic tunnels to the center of the Earth won't convince anyone these days, nor will visions of Venus populated by dinosaurs. If you really must write about such things, you'd better put your planet in some other solar system, where we might reasonably expect to find worlds that are Earthlike but with intriguing differences.

The important commandment in this kind of writing is, *Don't beg the question*. Don't try to get away with specific scientific theories that are clearly nonsense. Remember that readers want to be entertained and they'll meet you halfway for the sake of a "good yarn." They'll usually go along with you if you tell them that stars are sentient beings or that silicon aliens have learned English by watching TV broadcasts from Earth

for a few years (how much Swedish do you know after seeing a dozen subtitled Bergman movies?). But if you try to justify these assumptions, they'll see right through your fumbling explanations.

Better by far to leave out the science entirely.

I've managed to write successful stories about things like an impossibly overcrowded Earth where people simply choose not to see or feel most of their elbow-crowding neighbors, about an alien race that "remembers" the future as well as the past, and more. Fritz Leiber wrote a delightful story about ghosts on a space station; Robert Silverberg's short story about a robot that was elected Pope won a Nebula Award; and even Frank Herbert's *Dune* was set on a planet whose oxygen atmosphere apparently came from nowhere.

The essence of science fiction is not that it presents the likeliest futures, but rather that its futures are plausible for the duration of each story. Like all fiction, science fiction is built on esthetics more than anything

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else, and that's as it should be. Fiction is about people's responses to life's problems, ironies, and ambiguities; at its best, any kind of fiction is directed at the emotions. Science fiction has gone further than most fiction in realizing that intellectual interest is a form of emotion, that science can be the basis of good stories because its fascination is a strong emotional response that blends with feelings of hope, fear, and beauty.

Science fiction isn't really about science—in truth, it's about the esthetics of science. Logic has its own beauty: the neat symmetry of Newton's Laws of Motion, or the cool equations of evolution. Plato's ideals were an early attempt to celebrate the logic of the universe; and since his time we've learned that the universe is infinite and so is the delight of its expanding possibilities.

Even pure fantasy stories, at their best, show the fascination of logic. The best fantasies present readers with a single fantastic concept and proceed to explore its consequences as rigorously as any science fiction

story would; a writer who presents a vampire on page one and then tells us on page twenty that the vampire can also teleport is cheating readers, because the rules of the story are lost. As H. G. Wells said, "If anything is possible, nothing is interesting."

It's this logic, this playing-by-the-rules, that makes any imaginative story fascinating, and it's particularly important in science fiction. Readers may accept a planet full of witches, but only so long as the events of the story are believable as consequences of its premises. Even a magic planet will have its own particular ecology and history, and the sociology and myths of such a world can be fascinating indeed.

This is why we've had so many successful novels and stories that have come to be labeled "science fantasy." Readers want to experience wonders through the printed page, and though they don't think about theories of esthetics when they pick up a book or magazine, their responses to what they read will be prompted by such

things. The number of equations per page won't concern them; the pleasures of exciting, involving ideas will.

The special esthetic of science fiction lies in its world-view, the *weltanschauung* of a universe ordered by rules that have their own beauty and fascination. This grander view raises a story from a simple account of heroic deeds or perhaps painful emotions to an intimation of the whole of reality, why it works and how.

Science fiction fans have spoken and written for decades about what they call the "sense of wonder"; what they're referring to is a feeling of understanding the greater reality, and the awed delight that it brings. Consistent future histories such as those of Heinlein, Niven, or Cordwainer Smith give us this delight, as does the far-future world of Gene Wolfe's *Book of the New Sun* series. Even science fiction about depressing worlds and experiences can give us a feeling of the grander view by making us realize that cataclysms and pain too are intrinsic parts of the whole. Consider Olaf Staple-

don's cycles of growth and decay in *Last and First Men*, or James Tiptree, Jr.'s "The Psychologist Who Wouldn't Do Awful Things to Rats," which is so powerful because it contrasts scientific inquiry with larger questions of ethics.

It's because science fiction deals with the big questions, the triumphs and failures of human beings (and others) in an infinite universe, that people are drawn to it; the details, specific scientific extrapolations included, can be anything that serves the purpose. John W. Campbell, when he was once pressed for a definition of science fiction, said simply, "A science fiction story is one that satisfies my urge to read science fiction."

A science fiction story must be believable, but there are many ways by which the most fantastic notion can satisfy this aim. James Blish used biological speculation to write a science fiction story about werewolves in "There Shall Be No Darkness"; Richard Matheson, in his novel of a future world overrun by vampires, re-

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lied on everyday detail and the sheer pace of his story to carry readers along; in "The Stainless Steel Leech," Roger Zelazny employed the conviction of allegory to tell of a future in which humans had died and a vampiric robot was left to prey on its fellows.

All of them produced outstanding stories, but not even Blish's would stand up to determined scientific analysis. What they had in common was sheer writing talent, and here we come to the crux of the matter. You may know a whole lot about science, but unless you're able to write well enough to make your data and speculations into a story that will stimulate fascination in readers you won't be able to write science fiction successfully. Any editor can tell you about hundreds of stories that were scientifically sound but unpublishable because they were clumsily written, or the characters were unbelievable, or — as I've sometimes said in rejection letters — the stories just didn't sing.

Conversely, every editor alive has published stories that were

built on premises that any schoolchild could pick apart, but which worked because the writers' art, craft, and vision satisfied that basic science fiction urge for the sense of wonder.

I can't tell you how to do that in a short article, and even the many books that have appeared advising writers on the techniques of sf writing can give you only general guidelines, but there's one more point that must be made about the importance of science in science fiction. Yes, using scientific details in a story is a very good way of convincing readers that the tale to be told is worth their attention—but often such details can actually be detrimental, because they'll be obviously inappropriate.

A writer today setting a story on an airplane doesn't include explanations of aerodynamics; and in most cases it shouldn't be necessary, when writing about spaceships, to detail how they work either. Such explanations can undermine the feeling of reality: people of the future wouldn't need to be told these things, so it's obvious that

♥♥Because science fiction deals with the big questions—the triumphs and failures of human beings (and others)—people are drawn to it. The details, specific scientific extrapolations included, can be anything that serves the purpose.♥♥

when they appear in a science fiction story they're directed solely at people who aren't part of that future world—and the effect is to distance the reader from the fictional experience.

Science fiction readers already know how spaceships work, anyway; or at least they can and will do their own scientific extrapolations. So unless you have something dramatically new to offer, it's usually more effective to leave out the science.

Science isn't precisely what people want to read about, remember; what they're after is the scientific consciousness, the grand view. And even if you don't know a quasar from a quark, and you have no way of checking the facts, still... if you can write stories that make readers believe they've touched the greater reality, you'll do very well indeed.

Just be sure to leave out the quasars and quarks. There's no sense of wonder for anyone reading about a "greater reality" that's obvious nonsense.●

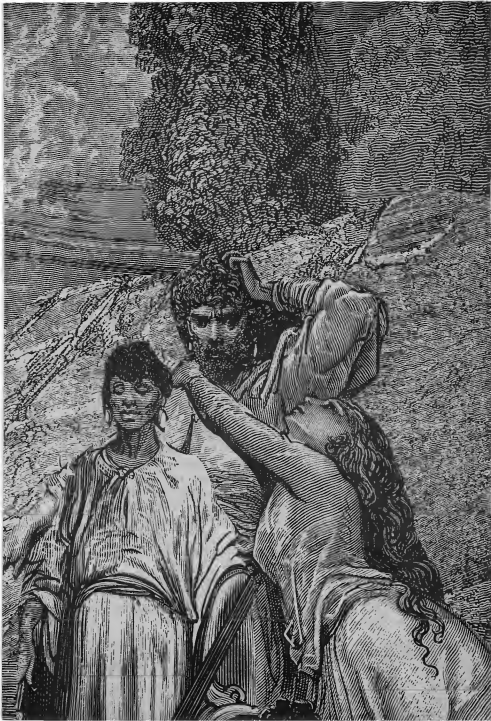
Brian Aldiss has long enjoyed a reputation as one of the finest writers in the SF field. Recently, however, this reputation has spread to the world of "mainstream" fiction through his novel *Hellaconia Spring*, which as of this writing is on the bestseller lists in England and is available in the United States from Atheneum Books.

art: Marc Yankus

ROMANCE OF THE EQUATOR

by Brian Aldiss





Friends, very long ago in the old tropical green world, a boy lived whose name was Kahlin. Two strange things befell him in his life.

First of all, when he was a mere youth, with limbs smooth as twigs, his home was demolished by a volcanic eruption. So great was that explosion that it could be heard by man and beast all round the world. Pieces of the earth were thrown into the air and landed across the seas two hundred miles and more away, where they still stand today as lines of hills.

The volcano destroyed Kahlin's home and killed both his parents and his little brothers.

Kahlin was so frightened that he ran and ran toward the north, away from the eruption. His legs carried him eventually to a narrow isthmus, fringed on either side by cliffs that fell sheer to the sea.

The boy heard a pathetic crying. He went to the edge of the nearest cliff and looked down. Two young gazelles had fallen over the side and were resting perilously on a ledge some feet below. Every effort they made to scramble up again endangered their foothold on the ledge. He could see that they were doomed to slip and fall.

Being a compassionate child, Kahlin removed his cloth head-gear and used it as a rope to lower himself to the gazelles. He took one of the poor little things under each arm and climbed with them up to safety.

The animals were exhausted. He improvised shelter for them that night on the far side of the isthmus and lay down between them, gazing piteously into their faces. One of the gazelles was white, the other brown. He put his arms about them and slept.

During the warmth of the night he heard a sound like the distant booming of the sea. He woke at dawn and found that the two gazelles had turned into young women. They lay naked beside him, their eyes closed, one brown, one white. Still he held them, and his heart beat strongly and his breath came fast as he gazed at their beauty.

The two girls awoke and gazed at him, the white one with blue eyes, the brown one with eyes of amber.

Kahlin had heard of such things happening in fairy tales, so he covered his nudity and said to the girls, "How beautiful you are, both of you! My guess is that you were both princesses, turned into animals by some great enchanter. Is that so?"

The girls sat up and concealed some of their nudity. They denied that what Kahlin said was true. "We were animals, and were happy as animals. It is only the enchantments of your love which make you see us as girls. You are in a spell, not us."

"So how do you see me?" he asked.

"As a handsome male gazelle."

He snorted with disappointment, but the girls said sweetly, "We love you as we see you, and you must be content to be loved according to our interpretation. Truly, if we saw you as you see yourself, we could not love you."

Because he was sensible boy, Kahlin saw some force in this argument, and because the world was young and its core still molten, he made love to the two girls, to the brown and the white, with equal passion.

Afterward, the girls rose up and bathed themselves in the sea for a long while, standing below a waterfall and washing each other's hair, the fair hair and the black. They wove themselves grass skirts before returning to Kahlin's side.

They regarded him with their large gazelle eyes and said, "Now the time is come when you must choose between us. It is not right that you should have us both. You must choose me or my sister to be yours, and to accompany you through the world until the last sunset, whilst the rejected sister goes on her way."

Kahlin grew angry and swore that he could not choose between them. They insisted. He threw himself down on the grass in a passion, beating the earth, swearing he loved them both, one with hair like a raven's wing and one with hair like honey.

"But we are going to live in different parts of the world," one sister said. "The pale to the north, the dark to the south."

Still he swore that he loved them both equally and would die if either left him. Dusk fell, and they were still arguing.

A moon rose like a washed shell on the blue beaches of the sky, and eventually the girls came to an agreement. They said to Kahlin, "We see that you hold us both dear. Very well, since you saved us both from death on the cliff, we will make a bargain with you. You shall enjoy us both, but a price must be paid, and that price must be your peace of mind. You will be forever trying to decide which of us you love the better, the brown or the white."

"I shall love you both the same."

Both girls shook their heads wisely and wagged admonitory fingers, white and brown.

"But that is impossible. Since we are different, so we must be loved differently. Did you not know that that is one of the great

secret truths of human companionship, and the cause of all its torment as well as its happiness? There is a configuration of love to fit the needs of every configuration of personality."

He threw his arms around them, crying, "There's no difference between you, except that one of you is brown and one white. How can I ever say which I love best, the limbs of ivory or the limbs of gold?"

And the girls smiled first at him and then at each other, saying, "Just as you see us only as female, so your love makes you blind to our real differences, which are many. But you will grow to see. Your blindness will not long protect you."

"You women talk too much," Kahlin said, clapping his hands together. "I will accept the terms of your bargain and love you both." Whereupon, he coaxed them to lie down beside him. The woman did not take a lot of coaxing.

The moon set. It rose and set again many times, undergoing its small but magical span of changes, rather like a chime blown by the wind. And with every moon, Kahlin grew older in experience.

He saw that it was as the girls said. They differed greatly in their natures. He could scarcely believe it. In the first flush of his love, he had been blind to their personalities.

Then they had seemed merely like personages from some deep dream. Now they slowly became human, with all their faults and contradictions.

One of the women was extremely passionate and desired always to be close to Kahlin, never letting him from her sight. The other woman was cooler and more casual in her manner, teasing him in a way that alternately infuriated and delighted him.

One of the women was a good cook and spent long hours over her stove, preparing with infinite patience dishes of great delicacy, which could scarcely appease the appetite. The other woman cooked indifferently yet bestirred herself occasionally to provide a grand feast, which they ate till their stomachs groaned.

One of the women was not greatly fond of washing and was lazy and spent much of her time lying about with her toes curled, prattling and laughing. The other woman was as neat and clean as a cat and spent her days trying to keep everything impossibly tidy.

One of the women was highly intelligent, making clever or amusing remarks and scolding Kahlin for his ignorance. The other woman was not intelligent and repeated everything Kahlin said in honest admiration for his cleverness.

One of the women was most active by day and leaped up with

the dawn, calling Kahlin and her sister to join her. The other woman was a night creature and came alive only after sunset, when she seemed to glow with a special light.

One woman was frank in all things, the other rather dishonest, full of amazing little secrets.

One woman painted and decorated herself; the other refused to do anything of the sort.

One woman had a gift for music and danced beautifully; the other could not sing a note but designed exquisite clothes for the three of them.

One woman smelt of musk, the other of honeysuckle.

One woman liked to talk about forbidden things and cast a languishing eye on other men, while the other made a mystery of herself and disliked Kahlin's men friends.

One woman kept a pet monkey that pulled Kahlin's ears, while the other doted on three cats.

One woman seemed to be never quite content, whilst the other was completely uncritical.

One woman let her hair grow long, while the other cut hers short.

As the years went by, one woman became surprisingly plump, while the other became surprisingly thin.

By the same token, Kahlin also grew old, and his hair turned gray. No longer was his step as certain as it had been, or his gaze so keen.

Every day of his life he worked for the two women and felt his love split between the brown woman and the white. Finally he rose and said to them, "Although I still have strength, I now know my days to be numbered. I have a desire to return to my origins, so I am going back to the mountains where I lived with my parents before the volcano erupted. You may come with me, or you may stay here, as you please."

This was in part his way of testing them, for he thought that perhaps only one—the white or the brown woman—would follow him on his journey.

So he travelled without looking back. He could hear that someone walked behind him, yet he refused to allow himself to turn to see who it was. He crossed over the isthmus where he had saved the two gazelles, the brown and the white, so many years ago that he went past the spot before recalling it.

Still he plodded on and came at last to the mountains where he had been born. As he climbed the sides of the final hill, scenes from the distant past swam before his eyes. Recollecting his par-

ents with love, he was granted insight, and he perceived for the first time how his father and mother had differed in every way, almost as his two women differed. Only his childish love, with its quality of blindness, had allowed him to see his parents as two equal gods.

"So I glean a grain of knowledge," he said aloud to himself. "Was it worth travelling all these years for?" But he answered himself that a grain of insight was indeed better than nothing.

So Kahlin came to the top of the rise. There before him, greeting his eyes, was a magnificent sight such as he had never seen before. Spreading from horizon to horizon, steep slopes clad in jungle led down to a vast lake reflecting the sky. It seemed to him that this lake stretched to eternity, cradled at the bottom of the encompassing slopes. Not a single boat or sail crossed that silent surface. The lake was like the heavens themselves, without wave or ripple.

Only after he had gazed for a long while at the vista before him did Kahlin realize that this was the enormous crater of the volcano which had destroyed his parents, his brothers, and many other people besides. Now the place of death had become fertile through the ceaseless processes of nature.

Kahlin turned. Both his wives stood behind him, the white one and the brown. He embraced them warmly.

"You see there is an island in the middle of this new lake," he said. "We can make a boat and sail to the island, and there the three of us will live out the rest of our lives."

But the women said, "First we must speak. We made a bargain many years ago, the three of us. You agreed to love us both at the expense of your peace of mind. We knew then, as we know now, that no man can love two women and be at peace in his mind. Every day of your life, our differences have tortured you. Well, now we release you from your bargain. You have often been unfair and cruel, it's true; once or twice you chased after other women, you even beat us, you sulked, and you did a lot of terrible things. You belch at your meals. All those things we now forgive, firstly, because we understand that such shortcomings are in man's nature, and, secondly, because despite those shortcomings, you did honestly try to love us both."

Kahlin looked from one to the other of them suspiciously.

"So, I'm free of the bargain, am I? Is this a new kind of trick? What follows next?"

The women, the white and the brown, smiled at each other, and then said, "We think you have learnt the lesson that, as we have different natures, so it is necessary to love us differently. You

have done well, considering your limitation as a man. Therefore we set you free and give you a further choice."

One woman kissed him on one cheek and one on the other, and they said, "You need take only one of us over to the island in the lake. Whichever one you choose will remain close to you for all the rest of your days. As for the other, you need never think of her again."

Then they walked around him and about, smiling mysteriously, and as they walked, they divested themselves of their clothes, for their bodies were still beautiful even in age, the brown and the white, and carried fewer lines of experience than their faces. And they watched him, the white one with blue eyes, the brown one with eyes of amber.

"Which of us do you choose, Kahlin?" they asked, at last.

He looked away from them, across the lake lying far below, across the uninhabited island, into the blue distance, and he said, "It really needs three people to build a boat, particularly if two of them are women. You had better both come with me. The three of us will live together on the island."

Without giving them more than a glance, he started down the steep slope toward the gleaming water. The two women followed, waving their hands and protesting, "But you could be free, you could be free . . ."

At the water's edge, they built a small boat, making a sail of woven palm leaves. They slept on the beach that night and, next morning early, before the sun peered over the lip of the great crater to disperse its dews, they rose and launched their boat toward the island.

The two women stood by him with their arms entwined about his shoulders and teased him, saying, "So, after all these years, despite all your lack of peace of mind, you still cannot decide which of us you love the better, the one with the hair like honey or the one with hair like a raven's wing. Really, Kahlin, you are a funny man! Now you're stuck with us both for the rest of your life."

The mysterious island was drifting nearer now. Kahlin could not help smiling, though he fixed his gaze upon the distant trees leaning out across the hazy waters, rather than on the tormenting ladies by his side.

For he had his secret. Whereas once, as a youth, he had loved them because he thought they were almost identical, he had learnt through many long years to love them both more deeply because of their differences. ●



SHAGGY PURPLE

art: Robert Kraus

by James P. Killus

James P. Killus is a smog chemist from Berkeley, California, whose work we've published quite frequently in the past (most recently, "High Iron" in the August 1982 issue). He says that he got the idea for this story from an SF convention art show. While wandering the art show with two friends, one of whom was SF writer Hal Clement, his companions were commenting on the verisimilitude of the various pieces of astronomical art.

When they came to a painting of a giant purple sun, his two friends snorted in unison. So, he says, he wrote this story.

"Hah!"

O'Dwyer gave a cackle and went swirling through the dining area. He would have scuttled—O'Dwyer normally both scuttles and cackles—but we were in free fall and would be for another six hours. And even after transition, how much good does one hundredth of a gee do?

"I've got it, folks," O'Dwyer announced to nobody in particular, but it was obvious that he was playing to the crew. He placed himself behind the lectern (we also use the cafeteria as a seminar room). In an attitude resembling a lecture stance, except for the 30-degree tilt to one side, he slipped his glasses halfway down his nose, peered over the rims, and cleared his throat. DeRusso scowled; the imitation was bit too blatant.

"Ahem," said O'Dwyer. "Gentlemen. A Pome:

I never saw a purple sun.

Now I'm gonna see one.

But I can tell you anyhow,

I'd rather see a purple cow."

O'Dwyer smiled his boyish smile and launched himself from the room without waiting for the reactions, such as they were. DeRusso maintained his scowl, Fredrickson snorted, and the rest of us kept a stony silence. Except for the pilot and crew, of course. They all grinned, and several even laughed. O'Dwyer has that school boy sense of humor that for some reason appeals to those flyer macho types. Just a bunch of overgrown kids.

I'm beginning to hate O'Dwyer.

It all started with O'Dwyer, too. He came scuttling in one day and said, "We just found a purple giant. Wanna look?"

"Go away and take your pornography with you," I snapped. I was short of patience. Cataloguing stargraphs had gotten me to the point of seeing stars that weren't there—wheatfield golden ones at that. Besides, O'Dwyer was known for his warped sense of humor.

"No kidding, Jim, look," he said as he slapped a photograph down in front of me. "Straight from Deepspace 24."

I glanced once, then did a doubletake. Then I stared. What the hell? In the middle of the photo was a bright purple dot. And I don't mean deep blue. I mean purple, like a grape.

"You faked the photo," I accused, knowing full well he hadn't. Not even O'Dwyer is crazy enough to tamper with starprobe data. He smiled. "Not on your life."

"Bad film maybe?"

"Not that either," he said, the smile becoming a grin. "I already checked. Besides, it shows up on two of them, enough for me to run a parallax and absolute magnitude."

"How big?" I asked.

"It's a gas giant." He laughed at his own words, as if they were the punchline to some exceedingly obscure joke.

I stared at the photo again, and he continued. "What we have here is a star with the size and energy output of a red giant. Hell, it's virtually main sequence. But ninety percent of its light is in the blue to ultraviolet." He laughed again. "This one will have the astrophysicists jumping out of windows."

Not for the first time in O'Dwyer's presence, I was speechless.

It serves us right for trying to map the galaxy, I guess. There are some things man is not meant to know, Doctor Frankenstein. Still, it seemed like a good idea at the time.

FTL is nice and cheap, but leaving a planet is miserably expensive. It costs about half a million to lift a man and life support into Earth orbit, but once there, you can visit the other side of the galaxy for a fraction of that. If only someone could dream up a reason for such a visit. All the profitable activities are close to home: vacuum and zero gravity manufacturing technology, asteroid mining, solar energy. Those have a high enough return to make the initial expense. But galactic tourism doesn't, and interstellar trade needs customers at both ends.

Also, the cost of living is very high out there.

If we could find life, or even some livable planets, it might be different. But life seems to be rare, and livable planets are as rare as life. One equals the other, actually, since oxy-nitrogen atmospheres are a product of life. In the few score systems that we've looked at closely, we've found quite a few Venus-type planets but no Earth twins. Some theorize that the moon has something to do with it. And don't ask about the endolithic microorganisms that they've found on Mars. That's too close and I'm no biologist. Nor do I theorize. I just categorize stargraphs—students and Ph.D. manqués being slightly cheaper than our pattern-recognizing machine counterparts.

The only reason that I can think of for my being along on the Purple Quest (O'Dwyer's name for it) is that our department found the damn thing in the first place. So we get the honor of looking at it, naming it, or whatever else strikes our fancy. It suits the powers that be (Fredrickson and DeRusso) to study it.

By the time we get back, Deepspace 31 will be fresh back with

another batch of photos for us to analyze and catalogue. A woman may work from son to son, but a research assistant's work is never done.

Actually, there are only four explorer craft, but each probe mission gets a new number. Then the cataloguing teams go over the data, code it up, and file it. In about a century we'll start all over again and see if anything has changed much.

Western Science is so wonderful.

Damn O'Dwyer anyway.

The ship came out of FTL approximately on schedule. This was apparent because the ion drive switched on and things began to drift toward the floor if you dropped them. I mention it as one of the more exciting things on the trip so far.

We were maybe 25 A.U. out at this point, and while four billion kilometers sounds like a lot, it shrinks when you consider that the gas giant itself is two hundred million kilometers in radius. We would get rather close to its surface, say twenty million kilometers or so.

The thermodynamics of the situation were strange. If the star were an approximation of a black body, the way most are (all but this one, in fact), we would put up reflective shields between us and the star and concentrate on radiating any excess heat that we picked up into space. We kept the shields, but in preparing for the mission someone had gotten cute and had them coated with a special polymer. The coating was transparent to light and UV but radiated like hell in the infrared. Since the surface of a gas giant is a fair vacuum, it was theoretically possible for us to fly right into the purple fellow, getting rid of all the UV and visible light that we picked up by radiating it away as infrared. We weren't about to try it, of course. We had at least one member of our party who still would not admit to believing that the star even existed. So theoretical possibilities or no, we were to play it safe.

DeRusso moved over to the intercom (one doesn't walk while weighing less than a kilogram) and snapped it on.

"Captain."

"Yes, Doctor." There seemed to be some sort of low-volume interference on the line.

"How long before we cease acceleration? Most of our instruments receive noise from the drive fields."

"About twelve hours, Doctor. We have a favorable initial velocity vector."

"Very well, I think we can keep ourselves occupied until then." Snapping off the intercom, he said, "Okay, let's have a look at the damn thing."

Curtis was already in the observation bubble when we got there, setting up his beloved spectroscope. There was only room for five in the small sphere, and O'Dwyer was one of those left outside. I mention this with perverse glee.

A starship on ion drive looks something like a doughnut being pulled on threads by a penny. The main body of the ship is a toroid, that being one of the possible FTL shapes. Don't ask me why; I never even understood general relativity. After transition, the ion tug is unslung and pulls the main body of the ship with three boron filament cables. The ion stream is directed through the hole in the doughnut, with a slight magnetic field to augment the pinch effect and keep the stream from spreading. The observation bubble was beneath the doughnut, so we could not see the tug, only the faint blue stream of its exhaust, if exhaust is the right word.

Later, when the sunscreen was up, the bubble would be lowered on a hoist out of its shadow for observations. The screen was not up yet, however, and we had a clear view of the star, looming one hundred times larger than the moon. It was bright enough to make you squint, even through the darkened glass of the bubble. But when you consider that this was an honest to God sun that we were looking at, it wasn't very bright at all. And the tinted glass accentuated the weirdness of the color.

"Jesus," said Kinnerson. "It looks like a mercury vapor tube."

"That's what it is," said Curtis. We all turned toward him in astonishment.

"Would you mind explaining that?" said DeRusso.

Curtis shrugged. "I just read 'em. I don't explain 'em. A complete spectral analysis will take a while, of course, but the mercury lines in this 'graph stick out like a clown at a wake. There's an awful lot of potassium in it, too; then hydrogen, naturally. Rather a lot of helium, I'd say, more than you'd expect. But Jeez, I'd say that this thing is two-thirds mercury and potassium."

The conversation in the bubble got very profane after that.

The next month was hectic, with new weirdness coming every day. Or perhaps it merely seemed that way. The strange intercom static that we had first picked up just after transition increased

in volume to the point of being a major nuisance. It seemed that every audio circuit in the ship was picking it up. It was not regular static either but more a chittering sound, maybe halfway between crickets and a horde of bluejays.

Everything else was summed up by Fredrickson on our last seminar after we had completed the cometary and just before the transition that would take us home to more sensible skies.

"I've seen evidence of many strange phenomena since the DeepSpace Program began," Fredrickson said. "But AJK 3107-65826 is far and away the most bizarre."

He paused, perhaps for dramatic effect. "Firstly, this star is not of remotely standard or even believable composition, having a photosphere that is 25% mercury, 20% potassium, 30% hydrogen, and 15% helium. The remainder is mostly neon and trace elements.

"Secondly, there is the star's mass, which is quite small, much less than our own sun. In fact, if this star were of normal composition, there is some doubt as to whether or not it would be a star at all, since its mass is on the fusion borderline.

"However, AJK (fill in the rest in the transcript, won't you?) has a radiant output, a rather sizable one. Incredible as it may seem, its energy comes from no less than four chunks of antimatter, of roughly equal mass, arranged in a tetrahedron and kept apart by sheer light pressure. According to calculations made by Mr. O'Dwyer, some fusion does occur in the stellar core, induced by the antimatter-generated heat, and there may even be some fission, depending upon the behavior of mercury nuclei under conditions with which we are unfamiliar. However, fusion and fission do not in any event contribute more than 30% of the star's output and it may be less, depending upon the neutrino loss factor.

"AJK's radiant output is therefore due to the gamma radiation of matter-antimatter annihilation which is then attenuated by the outer stellar layers. Because of the much more diffuse attenuation layer (as compared to a red giant, for example), primary output is in the ultraviolet with a strong overlay of blue and violet, produced by the ionized mercury and potassium of the photosphere.

"Other factors include an exceptionally strong magnetic field, origin unknown, massive electrical current surges in the outer layers, origin unknown, and a suppressed solar wind. The latter is probably due to the high mass of the mercury and potassium nuclei.

"As to a possible stellar evolution, we draw a total blank. There

is no way that matter and antimatter could coalesce in the same vicinity, yet if the antimatter formed separately, then somehow picked up the matter atmosphere, how did the four separate bodies form?

"As for the composition of the star, I'm still not sure that I believe it. Why mercury? Why potassium? Why no other heavy elements? Why? Why? Why?

"Who knows? I certainly don't. I'm thinking of becoming a plumber."

Everyone laughed at his little joke. I looked over at O'Dwyer. He seemed lost in thought.

Later that evening (1900 hours, Pacific Daylight Time, back on Earth), I was in my room, thinking. I had a lot of drudgework waiting for me when I got back. There would be thousands of new 'graphs to catalogue. There were a couple of exams that I had postponed. My adviser was after me to select a dissertation topic, and now that I'd been on this trip, he'd be relentless. We'd gathered a mountain of data, most of it unique and therefore publishable; there were dozens of dissertation topics that came easily to mind. All of them seemed tainted, unexciting, tinged with ennui.

Perhaps *brooding* was a better word for what I was doing. But dammit, the universe is not supposed to be so perverse.

There was a knock at the door. It was O'Dwyer.

"Got a few minutes, Jim? I need to bounce some ideas off someone."

I gestured about the room. "All of space and time are at your disposal."

O'Dwyer smiled. "I'm glad to see that you're not in your old gloom-and-doom mood. Nothing like a journey of a few hundred light years to mellow one out, eh?"

"Actually it's just the opposite," I said. "I've been thinking of chucking the whole thing."

His eyes widened slightly at this, but he said nothing. Maybe I'd finally managed to shock him for once.

"Well, what's on your mind?" I asked, partly to fill the awkward silence.

He blinked. "Oh, yeah. Well, I have a theory about Ol' Purple, and I need someone to tell me if it makes me certifiable."

"Okay," I said. "I'm hooked. What's your theory?"

"Purple is an artifact," he said. "Somebody built it."

I laughed. "Well, I walked into that one. Is that the punch line, or is there more?"

"I'm serious, Jim, really I am. Nothing else makes even a semblance of sense.

"I got to thinking about those four antimatter bodies. How did they happen? Then I thought that maybe *how* isn't the question, maybe it's *why*. So I did my back of the envelope calculations. About 30% of the power of this star comes from fusion, the rest comes from matter-antimatter conversion. Most of the fusion takes place in the volume between the four bodies, where the temperature and light pressure are greatest. As the antimatter gets used up—for a long time, anyway, millions of years—the core actually gets hotter! But it gets smaller too, as the core bodies get closer together. The net result is a virtually constant power output from the solar core. So the outer layers—the photosphere of Ol' Purple—remain in homeostasis. Purple will remain a purple giant for eons longer than it would if its core were solid antimatter. You couldn't do better if you tried, so I think that somebody did."

"But who would do such a thing?" I asked. "And why?"

"Hell, I can't say who. The thing's been around for a million years, so they're probably gone by now, or at least moved on to some higher plane. As to the why . . . Well, I thought about it. First, I thought maybe it's a traffic light or a signal beacon. But that doesn't work; it's too far out of the way and mostly obscured by gas clouds. And why make it so blatantly impossible, eh?

"You know, the chittering noise that we've got on our intercoms has to be tied into it somehow. If the star is a religious artifact, then the chittering would be prayers or hymns. If that's true, then that's that. You can explain anything with religion and it explains nothing. The builders would still be completely alien to us, and Ol' Purple would be a stellar version of the Sphinx. But there is another possibility that I prefer to the religious one."

"Yes?" I prodded, unable to help myself.

He smiled. It was almost his regular smile, but there was an odd twist to it. He straightened and punched the intercom button. The chittering filled the room; transition was only seconds away.

"I think they built it as a joke," he said. He gestured at the comm speaker as he left my room. "Laugh track," he said as he stepped out into the hall.

When we got back to Earth, the first thing that I did was to quit school. I tried getting drunk after that, but I've never been

very good at it. And I noticed that even being drunk didn't keep me from hearing the noises whenever I went outside at night. Chittering noises, halfway between bluejays and crickets. So now I stay indoors a lot and watch television with the volume up.

O'Dwyer published his paper, though he left out most of his speculations about the motives behind the building of Purple. But when the second expedition found the artifact, he became famous. What they found was just a little ceramic ball that absorbed light (purple light) and modulated a magnetic field. But there are billions of them, and collectively, they chitter.

The discovery was a nine-day wonder, a tabloid splash. O'Dwyer made the rounds of the talk shows, speculating on the motives and civilization of the ancient aliens. Then the excitement died out; the Sunday supplements required something sexier than unknown and vanished aliens who built a star for their own ineffable purposes. Man's first contact with an alien race became just another pebble into the rapids. Who cares, eh? Most people still believe that the Earth is the center of the universe, and some still think that the first lunar landing was a hoax.

I have a recurring dream, full of light, so bright it hurts my eyes. Luminous beings consuming luminous refreshment at the local luminous bar and grill. It has been a hard luminous eon or so of luminous astronomy lectures and luminous tests. One of the masses of light is complaining. His voice sounds a little like Mickey Rooney as Andy Hardy.

"Red giants, blue giants, white dwarfs, continuous spectra overlaid with a few puny emissions lines, all the same. How boring. Nature has no imagination when it comes to stars. Why aren't any of them purple or green or polka-dotted blue and orange?"

It's a shame, the angels all agree.

"Hey!" says one of the girls. (I know it's a girl because she sounds like the young Judy Garland.) "Why don't we make our own? My uncle's got a lot of antimatter. He'd let us have some if I asked him right."

"My father's got some spare mercury he's not using," one of the others chimes in.

"And I've been learning how to make potassium in alchemy class!" says another one excitedly.

"I know just the place for it!" says the first one. "It's an old murky part of space that's never been any good for *anything*."

"Well, don't just stand there chittering," says young Judy (who I realize is quite a ball of fire). "Let's go *do* it!"

And they race off in all directions.

When I wake up, it always takes a few seconds for my eyes to adjust to the darkness.

I saw O'Dwyer briefly just the other day. He was in a car that was pulling out of a restaurant parking lot just as I was going in. He caught my eye and waved excitedly.

"They've found a green one!" he yelled. Then he was gone.

He sounded a lot like Andy Hardy. ●



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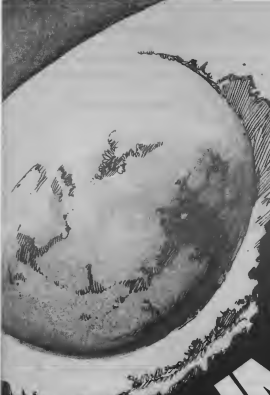
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PILGRIMAGE

by Skip Wall

art: Val Lakey/Artifact

The author, an architect, is currently working on the renovation of a 1932 Art Deco Los Angeles theatre. He's also started writing on a word processor, a change he says owes more to the fact that his wife is a systems analyst for the company who manufactured the machine than to the fact that his writing justified the investment. This is his third appearance in *IASfm*.



"Looks almost like an overgrown camera."

"Or an overgrown gun."

The two young men glanced at each other as the hot desert wind tugged at their rumpled green Survey Service coveralls. Both were short and solidly built; each had intense blue eyes, black hair, and dark tans. Nearby, the counter-rotating blades of their flyer swished, slowing. Low rippling dunes around them marched through an ankle-deep mist of wind-born sand. It was high midday; Theemor's intense white sun threw sharp black shadows close around their feet. Far to the north, worn brown-purple lumped above a shimmering horizon, lost beyond the endless moaning hiss of sand on sand.

"Whichever, it's the biggest find yet on this godforsaken sandball. Maybe the first real clue about the *old* Theemorians." Ricard Corcoran cackled with his joking interpretation of the planet's ancient inhabitants, and a friendly grin split the brown, boyish face. "Bonus time, big brother."

Thomas Corcoran nodded cautiously.

"Could be, Ric, but let's take it easy. Go by the book."

Ricard made a wry face at his older sibling, but there was no malice in it. Such lonely, isolated work bred deadly enemies or the best of friends. The Survey Service policy of forming teams from carefully selected sets of brothers was paying dividends.

The object before them was a perfect sphere, half buried in the sand, with a raised inverted dish set into one side. Another, smaller sphere was set into the dish, nestled in a cluster of complex, almost organic arms. The smaller globe had a knobbed surface, a black forbidden fruit set in a bed of Medusa's hair.

"Let's set up the holo and get some pics. Then some low-intensity scans. No telling what it might do, or how big the rest of it is under the sand, right? Ric?"

Ricard nodded, once again accepting his older brother's methodical ways. They looked up from their work hours later to see the mountains announcing sunset with dusky orange, ochre, and deep shadows.

"That should wrap it, Thomas."

"Make camp by dark."

"Yeah. And tomorrow Hoover and his buddies will swarm all over this thing, and the closest we'll ever get is those holos we just took."

Wordlessly, in a well-worn routine, they packed their gear back into a compartment in the belly of the flyer. Then the routine broke. Thomas looked up, his hand out, expecting Ricard to slap

an equipment grip in it. But Ricard was ten meters away, making a beeline for the object under a darkening purple sky.

"Ric, come on . . ."

Ricard replied with an impatient, knowing wave. Thomas stood nervously in the sudden chill of the deepening sunset and started to speak. But something stilled that demand to stop, some simple joy at seeing his brother do what they had left girlfriends, families, and budding careers to do.

You talked me away from my studio and into this job, Thomas. Now let me explore, for once.

Ricard peered closely at the smaller bubble and the twisted growth that held it. It was about chest high, with the larger sphere bulging in line behind it. Like a sleepwalker, Thomas followed, but only to the limit of that regulation circle of footprints. Ricard cocked his head, frowning, taking in the strange form in a pose of classic curiosity.

"This black grapefruit thing looks like it has chisel marks," he said. "Fancy that, a frustrated sculptor turned explorer finding a . . ."

There was a click, a solid sound, like a well oiled, expensive lock.

"Ric? Ric, what . . ."

Ricard turned, his face blank with some new knowledge, some painless, reasonless surprise.

The desert roared suddenly, swirling up around them in the harsh light of the dying sun. There was a sizzling rumble. Thomas jerked around. A huge reddish shape thrust up from the desert floor, and he staggered back away from the rapidly growing mound of displaced sand. All around him, obscured by violent clouds of sand, other gigantic shapes reared up as if to grasp the last rays of light.

"Ric! Ric, where are you!"

There was a splintered crash. Thomas sensed the spindly, twisted shape of the flyer above him, tossed like a branch. There was a heavy blow to his head. He swam out of spinning lights to consciousness for a few moments, nearly buried by the flyer and billowing sand. His sight was blurred by grit in his eyes and a searing pain in his leg, but something in those growing shapes looked familiar.

"Jeezus God, Ric . . ."

Despair was the last thing he knew.

The tram into the Great Waste was all polished chrome and

beige plasteel inside, but there were no windows. It was a clever touch. Seeing Chandigarh grow slowly on the horizon from forty kilometers away might diminish the impact.

For my own reasons, I was grateful.

The forty or so tourists in the tram with me lounged in a jumble of body shapes, holorecorders, and loud clothes. Young couples who had mortgaged their next ten years for an interstellar vacation held hands, and older couples with a lifetime of vacation money showed little use for each other's company. The conversation was quiet, punctuated by the intermittent shouts and laughter of a few children. One or two women travelling alone had given me the eye, but my introspection had soon put them off. Otherwise, I was ignored; a short, middle aged, balding man with a slight limp draws little notice, no matter what power he might wield in the Survey Service bureaucracy fifty light years away.

Finally, the tram droned to a stop. The doors hissed open, and the steward invited us out with a bored smile. Waiting in my seat in the back, I could see the little ohs and the blank looks as each tourist got to the door. Finally the steward gave me an annoyed stare, and I had to join them. As I stepped down, I instinctively raised my hand and squinted against the glare.

The arrival pavilion was a simple stone platform in the sand with a gently curving concrete roof. An attractive girl in her early twenties stood across from us, but few noticed her fresh, richly tanned complexion and starched guide's uniform. Behind her, endless fade-to-purple mountains thrust up from an ocean of white sand, and countless reflected suns glittered from crimson tower flanks. No mere girl could compete with the city of Chandigarh.

I stood in the back of the group, trying to find an excuse not to look. There was little to do except stare foolishly at my palms. Long, slender fingers with a hint of strength in them; they might have passed for an artist's hands. Now there was a bitter irony. Ric's hands, the ones with father's knuckly, powerful fists, had had the talent, had shaped and formed beauty with a skill I could barely understand and could never emulate. The hands with the skill had died young, while mine shuffled paper and tapped keys, reviewing, deciding, creating nothing except modestly competent Survey Service bureaucratese. Thomas Corcoran, Division Director, Darvis Sector. The title carried no weight here, not in sight of Chandigarh.

"Welcome!" The guide's voice was as fresh and firm as her face,

well suited to practiced recitals. "Welcome to Chandigarh, greatest mystery in the known universe!"

She banged her walking stick on the stone floor to capture the eyes still transfixed by the city.

"My name is Marlene. I am your guide. As guests of the Theemor Touring Agency, you will spend the next few hours among the towers behind me, and you will see wonders you will never forget."

A few of the people around me began to shift uncomfortably in the heat. It seemed to reach into the shade under the pavilion to encase us in an invisible coffin, sapping my will. I surrendered to Chandigarh, raising my eyes. The blood-red towers wavered in the intervening kilometers of restless, baking air, stirring old memories, old fears. My middle-aged pilgrimage seemed more ludicrous with each moment. I asked myself for the hundredth time why I'd come, what I was looking for. Some sign from Ric in that wild architecture, some signal ending thirty years of guilt? Would I stand in the shadow of the juggernaut that had crushed my brother, puffed with indignant courage, daring the round black monstrosity to show itself? I shook my head, sure that the gawking, shuffling tourists around me would effectively deflate any dramatic gestures.

"Another moment for pictures," said our guide, "then follow me to the bus, and we'll get out of this heat."

Sandals and city boots rustled and clunked on uneven planes as she led us down a coarse glassy path of lasered sand. We squinted and stumbled in the reflected glare. Mercifully, the path curved quickly around to the bus. The vehicle hunkered in mirrored silver on fat ribbed tires, a giant articulated worm reflecting distorted images of the towers. The guide touched a button on her sleeve and eight pairs of doors sighed open. Dark rectangles welcomed us to a cool, comfortable cabin with contoured seats. When the last of us were settled, silent electric motors eased us up and over the first dune.

Chandigarh lies in a wide desert between dark, ancient mountains to the north and dreary hills to the south. Above the endlessly shifting dunes, puffs of purest white scattered across the deep blue sky, some trailing wisps as they moved east. A few clouds drifted between us and the city's upper pinnacles, casting complex shadows on the red flanks below. A sense of unreality grew in me as we approached those red-spectrum towers. I'd seen them before, of course, on the pages in Ricard's notebooks and in the sketches on our bedroom walls when we were young, long

before I browbeat him out of his studio, away from his chisel and hammer and his unfinished shapes of marble and limestone and talked him into joining the Survey Service with me. You'll starve to death as a sculptor, I'd said. Come on, it'll be the two of us, just like always only better. A whole universe to explore, the biggest backyard ever. It's what you want, Ric. I know it is.

"Ladies and gentlemen, you may have guessed by now that in The Great Waste distances can be deceiving. We still have many kilometers to go. While we're on our way, let me tell you what little we know of Chandighar."

We know, don't we, Thomas?

It was as if he'd spoken in my ear. My hands turned white on the armrests beside me. Ric's whisper had been clear and unmistakable, a perfect replica transported across forty years from our childhood. But now it hadn't come from behind a bush or from in a tree in our backyard on a summer afternoon. It had come from the depths of my own soul, stirred by a presence in those towers. He was still there somehow, waiting for me. Fear began to nibble at me, but I told myself that long suppressed emotions were beginning to surface—nothing more. I tried to concentrate on the guide's voice.

"Thirty-one years ago, the first survey ships landed here on Theemor and found the arid grandeur of our planet unmatched by her meager resources. But the surveys continued, according to form. They found hints, here and there, that Theemor had once been occupied, that her lack of metals was no accident of nature."

Mined and farmed and sucked clean like a peach pit. That's what you said, Thomas. And you had to be the one to find it, to find some artifact of the vast power that could do what was done to Theemor. And I was there, big brother, right by your side, reaching out my hand . . .

Part of me wanted to cry out, to jump into the sand and run away from Ric's voice. How could I have believed that whatever power Ric had stirred would lay dormant, that its vast cruelty would allow me to pass untouched? As I wrestled with my fears, I realized I had come here seeking some confrontation, some test of courage and vengeance. I wasn't going to turn to jelly if I got it, dammit. I set my jaw; the old Corcoran stubbornness was taking hold. A large, elderly woman next to me sensed my agitation and shifted her torso like an indignant, lopsided pear. I smiled crookedly at her disapproving stare and controlled an urge to wipe my palms on my trousers.

"A year of scans and exploration revealed only a few tantalizing

traces of Theemor's former landlords, nothing to say who they were or where they'd gone. Except, of course, for Chandighar. An archeological team was dispatched by the Survey Service when the city was discovered, but they met immediate frustration and disappointment. There were no artifacts, no wealth of data about a former great civilization."

The guide paused in a practiced way.

"What they found was a single piece of glass, fused solid from sand."

I saw her glance in her mirror to see the expected mix of faces, some puzzled, some confused, some a little smug, having read it someplace.

"The dunes here once had more oxides in them. Chandighar sits in a hundred-kilometer circle of pure white sand, which is depressed approximately one hundred meters below the surrounding desert. All that missing sand has been calculated to approximate the volume of Chandighar. Every casement, every column, every contoured niche is part of a solid piece of red quartz.

"The city was found by a two-man survey team during the initial broad brush reconnaissance. Only one of the team members made it back to camp. He was barely coherent after wandering in the desert for days without food and water. They attributed his wild stories about Chandighar at first to exposure and nervous collapse, but finally he led them here. The other member of the survey team was never found. He apparently became lost in the city and was never recovered. Which brings me to an important point."

She stopped the bus and stood to face us with regulation emphasis. Most of the party waited with mild interest, never guessing the truth about the man sitting in their midst or about that cursed black sphere, buried somewhere beneath ten billion tons of glass and sand.

"From here," she was saying, "Chandighar is deceiving. It appears to be no more than a lot of big towers sticking up out of the desert. Not so. Some towers are a kilometer across at the base, and there are endless galleries and amphitheatres, great halls and countless tiny rooms. Inside, the variations in red and the translucent walls are very disorienting. Ninety percent of the city has never been mapped, and more than a dozen people have been swallowed up in Chandighar, lost from tours just like this one when they wandered off. A few were found . . . after they'd died of thirst. Do not, under any circumstances, leave the group, or the

yellow path. If you do, there is a good chance you'll never be found alive."

She turned back simply to her levers, letting it sink in.

Never to be found alive.

I closed my eyes in a hopeless attempt at escape, but that moment replayed again, when Ricard walked toward that ill-begotten thing, the terrible lost moment when I might have said the right words, when he might have stopped. I have dreamed it countless times. "Stop, Ric," I say, and he does, turning and smiling. Then that black, odious thing reaches out grasping tentacles, grabs him as I scream helplessly, draws him back to suck the juices of his thoughts and toss him aside, a hollow, translucent husk of skin slowly crushed by the coarse fabric of his uniform.

I opened my eyes as I felt the bus climbing ever higher dunes, rearing and plunging like a boat approaching towering cliffs in a heavy sea. Just when the towers were impossibly large and the bases of the nearest ones must be just beyond this next dune, we topped a high crest.

The sand before us flattened, thinned, then split and faded into wispy fingers lacing across a vast plaza of inlaid red tiles. Canals filled with drifted sand crisscrossed in artful patterns to disappear into cisterns at the city's base and into the cresting dunes. Beyond, the base of the city reared a hundred meters above us, broken by wide avenues and a bewildering complex of curving steps spreading across the geometric plain like blood boiling through a dam break. Just as the people began to shift and crane their necks, the guide touched the roof transparency control. It was as if the top of the bus had disappeared.

Chandigarh leaned them back around me, jaws gaping. Bulging and twisting, the towers wove with bewildering complexity, grasping at something just beyond imagination in Theemor's painful blue sky. The white pinpoint of the sun sparkled from columns, ridges, flying buttresses and every tiny facet that deigned to throw a parcel of reflected light our way. With each second, the planet's roll shifted the reflections to adjacent forms, and a new universe of suns was born.

We rolled again, down the last dune and across the plain of red tiles, then up the long gentle slope of a causeway. At the top of the rise it spread into a wide boulevard divided by a median of plazas and podia with intricate rails. Porticoes glowered from either side. As we lost sight of the mountains and dunes, we grew uncomfortable in the bus, as if we were passing deep into someone's crimson dream.

Not a dream, Thomas.

The passengers around me did not see my half-determined, half-fearful grip on the armrests, or the stare I fixed on the back of the seat in front of me. I fought the urge to jerk around, looking for the source of Ricard's voice; I could see nothing but the tourists in the next row of seats.

"Are you coming, sir?"

I looked up to see the concerned face of the guide. We had come to a stop; the other passengers had already debarked, and were standing outside. I had hardly noticed.

"I . . . yes of course. Sorry."

"It's all right, sir. Even after two years at twice a day, it still gets to me too sometimes."

I climbed down with the guide behind me. We stood on a broad yellow plastic rectangle near the center of a plaza at least three or four kilometers across. It must have been ringed by the highest towers in the city. To look up was dizzying, frightening, like being trapped in a temple erected for some mad, grotesquely self-indulgent god. The guide was cheerfully reciting her statistics, helping ordinary people to absorb the incomprehensible with a raised eyebrow, or pursed lips.

"Now," she said, "it is time for the walking tour. Remember, please do not leave the yellow path."

She motioned us past, her heels a few millimeters from the yellow edge. The group shuffled by her toward a structure that resembled an immense cathedral.

The carved entrance was a hundred meters wide, and ten times that high. As we began to climb the broad, gently curving bank of steps, we could see the door as an understatement. Inside, the nave glowed with ruby-filtered light from windows a kilometer and a half above the vast floor. The group walked slowly now, gaping. Tiers of galleries reared up into a thin mist, supported by tall, delicately formed columns. Light wells threw precise, icy shafts.

As we climbed the steps and passed under the arched door, Ric's whisper joined with the tourists' in a confused buzz. I would not run. I would not. I bit my tongue, tasting blood as I concentrated on the pain. We followed the yellow path for hundreds of yards, seeming to creep into the vast hall. Gradually, as they realized the size of the place, the tourists grew silent.

Ricard did not.

His voice was confused but insistent, overlaying itself in a chorus of a dozen, then a hundred Ricards, louder and louder, like

a great waterfall on my shoulders. Bewildered, I fell to my knees. My hands covered my ears. I felt tears on my cheeks.

"Stop, Ric! Please, for God's sake, stop!" My voice echoed high among the galleries; I sensed the party stopping around me, staring at the blood trickling from my mouth.

Suddenly there was silence, and Ricard spoke with one voice, resonant, deep inside me. He spoke the words that had begun a thousand nightmares, the words I knew I would obey.

COME TO ME, THOMAS.

I stood unevenly.

COME TO ME, THOMAS.

"Sir, I think I'd better take you back to the bus. I have something in my kit . . ."

I walked easily out of the guide's firm grip on my arm. I knew what called might not be Ric, but I didn't care. I would face the juggernaut, and curse it.

"Please, you can't go out there. You must stay on the path!"

Out of the corner of my eye, I saw two men step off the path toward me, wanting to help. She motioned them back.

"Look, I can't leave the group to follow you. It's the rule. We can't wait for you. People have been lost and died . . ."

"Stop!"

"Come on, Mister. You'll get lost."

The voices had little meaning. I walked quickly toward a bank of steps a hundred yards away. By the time I reached them, the cries behind me had stopped. I began to climb, then followed the gallery, delicate columns on my right, until I reached a broad, ornate hall leading to the left. I willed my eyes to one last glance at the tour group in the distance, huddled together on that thin yellow thread, watching. That distant, eager whisper seemed to swell impatiently inside me.

Thomasthomasthomasthomas . . .

I dared think only of my brother's destruction. I lurched down the hall, passing large, airy chambers on either side, some lighted by translucent panels and light wells, others dark. A hundred meters farther on, a wide staircase plunged into red-tinged blackness. I paused, listening. I heard only my breathing, my heartbeat. A bead of sweat trickled down to sting my eye. The sense of inevitability was complete. I placed my palm on the cool glass wall and started down. After I took a hundred cautious steps it was very cold and nearly pitch dark. My shuffling feet echoed, a lost, questing sound; I was at the bottom. The hall curved off to the left toward a pink glow.

My steps down that long corridor had a final, fatalistic sound. I was certain now what waited at the other end. It wasn't Ric that called me; it was that thing, preparing to use me as it had used Ric, for its own purposes. I was caught again in the net of its power.

By the time I reached an archway at the end of the corridor, my eyes had adjusted. Dim light filtered through translucent rectangles in the floor of the nave high overhead to illuminate a large chamber with vaulted columns and a floor of sand. To one side was a twisted hulk. Rotor blades jutted upward, then sharply down like the ears of a rabbit; the transparent cockpit bubble was smashed, half-buried. Our Survey Service flyer lay exactly where the erupting city had thrown it thirty years ago. Somehow, I had crawled out of this place on that terrible night, too confused and frightened to remember. Across the chamber the orb waited in shadow, a malevolent incendiary left carelessly behind to be found by uncomprehending savages. Terror crawled across my back and up my neck, amplified by the chill. My incoherent cry of rage and fear filled the chamber. The answer was simple, compelling.

COME ON, THOMAS.

I staggered across the sand toward the orb, my face flushed, my mouth bloody. In a moment I stood at that terrible apex. In an instant, my insane courage dissolved. I felt like an insect in the last second before the indifferent boot descends. What monstrosity would burst from the desert now, amplified a trillion-fold from some forgotten minor cruelty in my past? I thought of those people on the yellow path above, and the next busload, somewhere out there, unsuspecting. Fool, I thought, fool, fool . . .

I knew only that my life had been the merest of illusions, a troubled dream from which I had just awakened. My wings spread wide, drew down now and again with a joyous strength to reach up, up to coursing breezes. I circled far above the white desert, searching with purest vision for tiny sand creatures far below. Just to the north lay Chandigarh. The highest peaks soared past me into clouds and out again, the upper reaches appearing like castles nestled in white vapor. I banked again, to swoop between the city's spires, and Chandigarh began to melt.

I fell in confusion, my great wings buckling, but the city fell faster beneath me, burbling down with a rumble that shook the distant mountains. The collapse slowed, the chaotic dissolution began to take shape. I shut my eyes and with a concentrated effort of will spread my wings and caught the air again. I banked away in fear, but looked back. Recognition grew, A vast head looked up

at me from the desert. I turned back toward it in a long dive. It was Ric, his chin raised, lips parted as if to speak. I banked again, and faster than any bird has ever dared to fly, I swooped into the cavern of his mouth . . .

"Wake up, Thomas."

I jerked up. Ric kneeled with one knee in the sand a few feet from the orb, smiling calmly at me.

"Yes, it's me."

"Ric. How . . ."

"I don't know, Thomas, but I can't stay long."

I scrambled across the sand to grab the rough material of his Survey Service coveralls, the same ones he'd worn that day thirty years ago. His strong, bony forehead, his bushy sun-bleached eyebrows and penetrating, gentle eyes were inches from mine. His mouth split in a familiar, crooked smile; he seemed almost embarrassed by my intensity. He hadn't aged a day, but he seemed not to notice my thinning gray hair, my crow's feet, my worry lines.

"Let's go," I whispered, "while we still . . ."

He shook his head, smiling. I stammered.

"But Ric, it . . . it'll get you again."

"Thomas, listen to me. I will try to help you understand." He paused, as if trying to find a way to explain death to a child.

"On Earth there is a mountain in North America. One whole shoulder of granite is carved into a statue, an aboriginal chief on his horse. It was done several centuries ago by one man and two generations of his sons. They spent nearly six lifetimes carving it from solid granite. None of them rested until it was finished. Thomas, what they felt about that mountain, I feel about this city."

"But that thing built all this! It squeezed it out of your head and . . ."

He shook his head once.

"I'm building it, Thomas."

I was stunned.

"You? But that's not possible."

"I asked for the tools and the time. A great deal of time. They were given to me."

"You . . . you asked? But why? Why couldn't you tell me? How could you just go and not tell me? Damn, Ric. Don't you know what I've lived with?"

He shrugged, an infinitely sad and gentle gesture.

"Thomas, Thomas. Could you ever explain to mother why you

took the two of us away to join the Survey Service? She never understood, not really. When we came to Theemor, we were both looking for something. I happened to find it. You if anyone should have known. Chandighar is my work! No machine could do this."

He saw my gaze lift past his shoulder to the orb.

"No," he said. "Not even that one. Now come on. I can't stay much longer."

He stood over me, patiently waiting for my abused nervous system to respond. Finally, I found myself stumbling across the sand toward the corridor, his hand at my elbow was like a nurse leading a weakened patient.

The warmth and strength in his hand were calming and sent a glimmer of understanding through my confusion. His expression in that last moment so many years before, the blank stare. It hadn't been the look of a zombie, sucked dry by some infernal machine. No, it had been the same look he'd had when he used to pore over his sketchbooks, and when he carved those artful fantasies, a look of pure, self-absorbed enjoyment. The orb had somehow compressed a hundred lifetimes into that night when the towers roared up from the sand, and when the next sunrise lit the pinnacles for the first time, sending shafts of refracted light shimmering across the dunes all the way to the mountains, Ricard experienced something I could never understand. The energy behind his work flowed from a universe of feeling alien to me.

He was right. I should have known. I had used my guilt to shield myself from a more painful truth. My brother found in his sculpture what he'd been searching for, and I had selfishly pulled him away like some jealous paramour. I turned to face him with the first real understanding of what I'd done.

He wasn't there.

I scanned the chamber. The orb. The flyer. The sand. I looked down. There were no footprints but my own.

"Ric?"

His name echoed and died. He had returned to his red glass, leaving no clue that he had been more than a dream. His sculpture had consumed him, and he it. Ric was all around me; he had become Chandighar.

I turned one last time to the orb. Ric had simply framed the right question, activated it with his special need. Now it would wait until the next mind filled with cities unbuilt and songs unsung passed by, until the next stifled genius wandered near, and

it would offer a way. It could do nothing alone. The real power, the real mystery had been in my brother.

I was exhausted, yet my vision had a certain clarity, as if a gray film had been removed. I found my way up the stairs again, through the great hall, and walked outside into the sunlight in the plaza. The silver bus waited for the return of its passengers. Hot desert breezes rustled around my feet and whistled somber tunes someplace high above. I was alone with Chandigarh, the way it was meant to be seen.

I looked up. The towers seemed to speak in some secret childhood song, attuned to me, pleading with a secret too precious to reveal. My body felt transparent, insubstantial, as if the wind might take me. I spread my arms in an impossible embrace, and for a long time I stood looking up with simple wonder into my brother's face. ●



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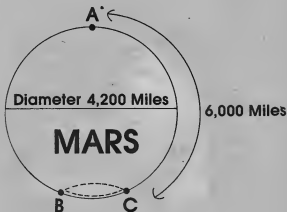
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SOLUTION TO MONORAILS ON MARS**Figure 1**

To see that *B* is closer to *C* than *A*, take a look at the sketch shown in Figure 1. *B* and *C* must lie on the dotted circle. Assuming *B* and *C* are as far apart as possible, the distance between them obviously is smaller than the distance from *A* to *C*. (Thanks to Mike Steuben for this one.)

About ten years after America established the first three bases on Mars, the Russians built four bases. They located them at the corners of a square. Call them *ABCD*.

The four bases were joined by a monorail network that minimized the total length of the track. Assuming that the side of the square is 100 miles, can you calculate the network's total length?

The answer is on page 91.



THINGS THAT GO QUACK IN THE NIGHT

by Lewis and Edith Shiner

By the time this story appears,
the authors will have been married for over a year.

This is Edith's first sale; Lewis,
however, has sold to *Analog*, *F&SF*, *Twilight Zone*, and others.
This is his first appearance in *IASfm*.

The story, they say, was inspired by a trip
to San Marcos, Texas, where
they were pursued by bands of bread-starved ducks.

art: Janet Aulisio

The note was stuck to the refrigerator with one of those little
round magnets, so I'd be sure to see it when I got home from
school. It read:

My dearest son—

I only wish I could explain this all to you, but I know you
wouldn't believe me. So I'll just say that I have to go away. I'll
probably never be back. I'm fine, and I love you, but it's just
something I have to do.

Love,
Mom

P.S. Remember, don't feed the goldfish more than once a week
or they'll bloat.

I'd grown up without a father, and now, only a few days before
my eighteenth birthday, I'd lost my mother as well. Someone else
might have reacted with grief or despair, but frankly, it made me
a little angry. I swore I would find her and at least make her tell
me the reason she'd gone.

She'd left most of her belongings behind, and I went through

all of them, looking for a clue. Finally, stuffed into the toe of an old pair of hiking boots, I found the following letter:

Dear Emily,

So good to hear from you after all these years, and with such good news as well! I look forward to seeing you and Jonathan, and of course, in the circumstances, you're welcome to stay as long as you choose.

Fondly,
Dr. Canard

The letter was little more than a week old, which was pretty strange, considering that Jonathan was my father's name and he was supposed to have died before I was even born. The letterhead read "the clinic," just like that, with the fashionable lower-case letters, and gave an address in Switzerland.

I was very interested in learning the "circumstances" that the mysterious Dr. Canard had referred to.

"the clinic" sat on top of a pine- and cedar-coated hill that looked down on Lake Zurich. My nerves were still shaky from a ride across the lake in a suspended cable car that we called a Swiss Sky Ride in America, but which the Swiss seemed to think was some kind of public transportation.

It was a beautiful setting, real picture-post-card stuff, but I was in no mood for it. It's not that easy to go jetting around the world when you're only seventeen, particularly when the police are still trying to puzzle out why your mother disappeared.

I went right up to the front door and rang the bell under the little brass plaque with Canard's name on it. I didn't hear anything inside, but a moment later a woman opened the door. She was wearing the kind of uniform that French maids wear in cartoons that I'm not supposed to be old enough for.

"I'm here to see Dr. Canard," I said, and she led me into a room with big leather chairs, a fireplace, and a rear wall full of windows. An old man wearing a monocle and jodhpurs sat in one of the chairs. His mass of fine white hair was uncombed, and his goatee was just a little off-center.

When he saw me, the monocle popped right out of his head.

"That will be all, Joseph," he said to the maid. I took another look at her and saw what might have been a light stubble around the chin.

"Very good, doctor," the maid said in a deep voice, and turned away. I settled uncomfortably into one of the chairs.

"And you," he said, looking me over, "you would be Drake Russel, *nicht var?*"

I started to answer him but didn't get the chance. "I'm glad to see you. How glad are you, Canard?" he asked himself, plowing right ahead without giving me an opening. "So glad that I shall offer you some tea. Would you like some tea? Of course you would."

Dr. Canard, I realized, was a loony.

He poured a cup of tea, then left it sitting on the trolley while he walked over to a long sliding glass door. On the slope outside two of the largest mallards I'd ever seen in my life were waddling toward us, gesturing with their bills and wagging their stubby tails. Canard suddenly pulled a cord, and curtains shot out to cover the glass.

The room fell into near-darkness, and I wrestled with an urge to run away before things got any stranger.

"You are here," Canard said, "to ask about your parents, *nicht var?* Of course you are. But why should I tell you? You would not believe me."

"Why don't you—"

"And why wouldn't he, Canard? Is he not an intelligent lad? Clear-eyed, bright-cheeked? Very well then. I shall tell you. But you must pay attention, and you must not interrupt."

I was going to tell him that there didn't seem to be much chance of that, but he had already started his story.

On their honeymoon, Jake and Emily Russel came to the Hotel Anatidae, a secluded resort on Lake Zurich. They had been married a little over a day and had just finished dinner in the hotel's elegant and somewhat overpriced restaurant.

Things, as things should be on a honeymoon, were quite nearly perfect. They had scoffed at the waiter's warnings that they should return to their cabin before dark, lingering instead over a second bottle of wine.

"Just what is it," Jonathan had finally asked him, "that you think is going to happen to us?"

"There are things in the night," the waiter intoned solemnly, "that you Americans know nothing of."

"Such as?" Jonathan demanded. "Muggers? Here?" He and Emily both laughed.

"Beware," the waiter had told them. "I can say no more."

The full moon was rising as the they strolled, hand in hand, along the lake. Emily had saved a crust of bread from the table

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and was distributing it among a gaggle of ducks that had waddled after them across the lawn.

"What do you call an incompetent doctor?" she asked them.

"Quack!"

"Right!" She threw a piece to one of them. "What do you call a break in the sidewalk?"

"Quack?"

"Very good!"

A huge mallard, well over two feet tall, had joined the throng. His bill was bright orange, and the moonlight glistened off the green on his wings. Strong and proud a specimen as it was, Jonathan still found something odd, almost human, in the animal's expression.

"Give me some of that bread, will you?" he asked his wife. He held out a chunk of bread toward the duck. "Here, old boy would you like—"

The duck moved with startling swiftness. "Ouch!" Jonathan cried, as the bread disappeared and a stab of pain went through his hand.

"What happened?" Emily asked, taking him by the wrist and examining his fingers.

"The damned thing bit me."

"Jonathan! You're bleeding!"

It was true. More confused than anything else, Jonathan stared at the thin line of red across the base of his thumb. He pulled his hand away and sucked on the bite. "Imagine that," he said wonderingly. "Vicious ducks. You don't suppose that was what that waiter was trying to tell us about. . . ."

"Let's get back to the room," Emily said. She threw the last of the bread into the mass of quacking bills and twitching rumps, then turned away. "Jonathan?"

He shook himself from his reverie and followed her. "Yes, dear. Coming." But as he took one last glance across his shoulder, the huge mallard seemed to be watching him, gazing deep into his eyes with a look that was both angry and somehow sorrowful at the same time.

A month later, back in Connecticut, Jonathan had returned to his accounting firm, and Emily was settling into the routines of housework. As was common in those days, they'd married without having slept together beforehand, let alone having lived together, and they were still getting to know each other. Thus the things

that Emily began to discover among her husband's belongings did not alarm her.

Not at first.

Things like the down pillows he'd bought to replace the foam rubber ones she preferred. The half-eaten crusts of stale bread that she'd found on the floor around his desk in the study, where he'd been working late at night with increasing regularity. Frankie Laine's "Cry of the Wild Goose" left on the changer of the hi-fi. The decoys in the garage. A shirt with a print featuring hunters and hunting horns, torn to shreds and left on the bottom of the closet.

His behavior seemed to be changing as well. He grew more restless every day, more prone to sudden fits of clumsiness. Though it had always been one of his favorite meals during their courtship, he now refused to eat chicken or any other poultry. Even the sight of fried eggs seemed to horrify him.

They had been married just two days less than a month when it began in earnest.

They were lying in bed together, a gentle autumn breeze tugging at the window curtains. Emily was just about to fall asleep when she heard Jonathan shifting around in the bed.

"Is something wrong?" she asked him sleepily.

"No, nothing. I'm just restless. I think maybe I'll get up for a while—maybe read or something."

"Jonathan?"

"What?"

"Are you . . . all right? You've seemed so distant lately. Is there anything bothering you? Is there something wrong with me?" Emily had been paying attention to the commercials on television lately, and it had begun to make her insecure.

"No, darling, of course not." He took her into his arms and patted her back, but she could tell that his heart was not entirely in it. "You go back to sleep," he said. "I'll just go read for a while."

She did fall asleep, at least for a few minutes, but then a sudden noise woke her again. It came from the direction of the study, and it sounded like a strangled cough, or a . . .

No. Emily suppressed the thought before it could fully form. There was no way a bird that large could actually get inside the house.

She got up and slipped into her dressing gown. She hated to disturb him, but she knew she wouldn't be able to go back to sleep until she was sure Jonathan was all right. She tiptoed down the

hall, hesitated with her hand on the knob of the study door, then eased it open.

Enough moonlight shone through the open window for Emily to see that her husband wasn't there. She was about to move on and check the kitchen when something caught her attention.

She turned on the overhead light and gasped. Jonathan's robe and pyjamas lay in a tangled heap in the middle of the floor.

There was no other sign of her husband in the room. Her heart in her throat, she searched the rest of the house, fruitlessly, and came back to the study.

That was when she noticed the feathers on the sill of the open window.

Frightened, but knowing she had to make the effort, she walked around the outside of the house with a flashlight. The neighbors all lived on the far side of the woods, and Emily felt threatened by the lurking trees and the ghostly moonlight reflecting off the pond. She couldn't find as much as a footprint to show that Jonathan had been outside, so she went back in, locking the front door after her.

Latching windows and bolting doors as she went, she made another search of the house, calling Jonathan's name. Then she returned to the living room and sat on the couch, holding the flashlight in one hand and the fireplace poker in the other.

She thought for a long time about phoning the police, but she knew there was nothing they could do before morning. Maybe Jonathan would be back by then, with an explanation for everything.

Please, God, she prayed, let him be back by then. . . .

The living room clock read five A.M. when she heard something at the other end of the house. It sounded like someone trying to get in the window of the bedroom.

Oh God, Emily thought. The latch on that window is loose. Jonathan had been meaning to fix it.

She started down the hall, holding the poker in front of her. Better to face it, she thought, whatever it is, then to let it find me cowering under the sofa.

At the door of the bedroom she stopped.

Jonathan lay in the bed, asleep.

The window with the weakened latch was open, and the prints of bare, dirty feet led from there to the bed.

Emily bent over him, hearing the sound of his ragged breathing, and tried to wake him. He moaned once, but he seemed too ex-

hausted to come around completely. Emily stretched out beside him, willing to let him sleep, grateful beyond words that she had him back.

She rocked him in her arms for several minutes, then slowed, sniffing the air. She looked at Jonathan and sniffed again.

His breath reeked of fish.

Jonathan woke up unable to remember anything that had happened after he went to the study. He thought he might have had a dream that he was naked, trying to open a locked window.

"You were gone almost five hours," Emily told him. She was exhausted, not having slept at all.

"I must have been sleepwalking," Jonathan said.

"But where did you go? What did you do? You were alone out there, naked, for five hours!"

"I tell you I don't know," Jonathan said, with just a trace of irritation in his voice. "I just want to sleep some more. I'm so . . . tired. . . ."

Emily left him and sat on the couch in the living room, drinking one cup of coffee after another. Not even the caffeine could keep her awake, however, and by late afternoon she dozed off. She woke in Jonathan's arms as he carried her back to bed.

"Whaa . . . ?" she asked.

"Go to sleep," he told her. "Everything is fine."

It was night. The bed seemed to swallow her, and for a second Emily let herself go, back into the waiting depths of sleep. Then some part of her fought back to the surface.

"No," she murmured. "Got to stay awake."

She forced her eyes open and blinked until the room came into focus. "Jonathan?"

He was gone, and she could hear the whisper of his study door closing behind him.

She was too weak to stand, so she crawled on her hands and knees to the door of the study. Forcing herself onto her wobbling legs, she twisted the handle and flung the door wide.

And she saw him.

At first she wanted to laugh. He had taken off his clothes and was bending down in a tight crouch. His hands were tucked up into his armpits and his elbows were straining toward his sides.

And then he began to change.

"Jonathan!" she cried, but he was beyond hearing. His legs were drawing up and his feet were turning orange. Brown feathers

were sprouting from his arms, and his nose was growing, flattening. . . .

"Jonathan!" she screamed. "I can't stand this! My mind is going to—"

"Quack," said Jonathan.

I felt dizzy, feverish, disoriented. Dr. Canard was obviously mad, raving, certifiable. I had listened to his story with impatience, disbelief, and finally scorn.

And yet . . .

Why had my mother refused to let me watch Daffy Duck cartoons as a child? Why had I been in junior high before I'd found out what the word "poultry" meant? Why had the sight of a friend's swim fins sent her into hysterics?

"I can't—" I began.

"You find this all hard to believe, *nicht var?* You think it absurd. Well, why shouldn't you? To me it seemed absurd also, when I first heard of it."

Dr. Canard stood up and began to pace the floor. He was so short that it seemed to take minutes for his tiny footsteps to carry him from one side of the room to the other. "Your parents first came to me when ordinary doctors proved stupid, useless, worthless to them." He paused to stare at me for a second. "As they so often are. Would you believe they once thought that I—" He shook his head. "But I digress.

"The medical doctors told your father to see a psychiatrist; the psychiatrists told him that both of them should be locked up. Finally they heard of my researches, such as the salt-free diet I developed while in telepathic contact with the planet Uranus. They knew I would be the one to find the answer."

"And—"

"Did I find the answer? Of course, I did. I observed your father for months, travelled over the continent, researching folk tales and poring over ancient volumes in obscure libraries. Your father was a remarkable case. You have heard of the legend of the werewolf? Yes, I see that you have. Well, your father was—"

"No . . ."

"—yes, a wereduck. That is correct."

In their third month at the clinic, Emily came to Jonathan as he was studying a moth- and mold-ravaged text entitled *The Necronomiduck*.

"I'm pregnant," she told him.

Jonathan's face lit up. "Darling, are you sure?"

She nodded, and Jonathan started to throw his arms around her, then suddenly pulled back.

"What's wrong?" she asked.

He shook his head. "Nothing. I'm sure it's nothing. It's just . . . what if the child should turn out to be a . . . a monster? Like his father?"

Emily pressed his face to her breast. "No, Jonathan! Don't say that! Don't ever say that!"

"But even if he's perfectly normal, what kind of father would he have? What kind of help would I be to you? Could he live on the fish and bread crumbs I'd bring home?"

"Oh, darling, that's not important. As long as we love each other, nothing else matters."

The boy, Drake, was born normally, and the three of them returned to Connecticut. Dr. Canard promised that he would not rest until he'd found a solution to Jonathan's affliction, but he did not sound hopeful.

It was fall again in Connecticut, and during the first full moon in October, Jonathan disappeared. Emily was frantic, phoning police and animal shelters for miles around, with no success. Finally, two days later, Jonathan returned. He was dressed in nothing but an oversized raincoat and was sneezing all the way up the path.

"I came around in a swamp in Maryland," he told her. "I had a couple of shotgun pellets in one arm from an off-season hunter. The last thing I remember before that was smelling the air and feeling this overpowering urge to fly south."

He'd stolen the raincoat from a sleeping hobo and hitchhiked home, without even a dime to call for help.

"I can't go on this way," he told her. "Next month it'll happen again, and who knows how far I'll get before I come back to my senses?"

"I could sew up a little bag for you," Emily offered. "You could wear it around your neck, and I could put some traveller's checks in it."

Jonathan shook his head. "It's no good. I'd never remember to put it on. No, Emily. I want you to stay here with Drake, and I'll face this on my own."

"If you have to go," Emily said, "you have to go. I'll manage. But what about you? You can't just wander the world, leading some kind of desperate hand-to-bill existence?"

"Somewhere there's an answer," Jonathan said. "I'll find it, and when I do, I'll come back to you."

Emily never gave up hope. Each spring she sat on the porch with field glasses, watching the ragged V's of ducks as they crossed the sky, waiting for her husband. Each fall, with the first frost, she aged an entire year in a day.

Sixteen years passed, and her son grew almost to manhood. And then, one day, a letter arrived from Mexico, covered with exotic stamps and addressed in a familiar hand.

"I have it here somewhere," said Dr. Canard, shuffling through the drawers of his desk. "Ach, here it is."

I had been hoping he wouldn't be able to find it. The more elaborate his story got, the more nervous it made me, and when he started producing evidence, the urge to run away came over me again.

"I'll read you some parts of it," Canard said. "'My darling, I long to . . . ' No, not that part. Ach, here we are.

This last winter was so cold that I came all the way to Mexico, to a small village in the Sonoran Desert. I met an old man here, a crazy hermit. All the people in town think he's a witch, but he seemed to understand me somehow, to know about my "problem" without my telling him. He speaks very good English—he says he learned it from an American anthropologist who comes to visit him every couple of years and make up stories about him.

We'd stay up late into the night, him eating cactus and me munching on bits of stale tortillas, and he made me see something I'd never thought of. I'd been trying to run away from my curse instead of learning to live with it. He taught me to embrace it, to accept it totally, and then, when he told me what he could do for me—for us—I realized that this was the answer I'd been searching for.

"So," Dr. Canard said, popping the monocle out of his eye, "your mother joined him in Mexico. She could not tell you what it was she planned to do, first because she could not know if it would be successful, and second, because she knew you would not believe her anyway."

"Did—"

"Did this witch-doctor cure your father, you ask? Yes, he did. Your father no longer changes to a duck with the full moon."

He paused dramatically, and I knew the worst was about to

come. "Now," he proclaimed, "he—and your mother—are *ducks forever!*"

Canard ran to the glass doors and yanked open the curtains, exposing the two huge ducks who had been waiting there the entire time.

"Behold, Drake Russel!" Canard shouted. "Your mother and father!"

I let the silence hang on for a long time, and then I said, very quietly, "You're completely wacko, you know. Bananas. Berkshire. Round the bend. Stark, staring—"

"So it must seem to you, my boy—"

"Shut up!" My hands were shaking as I got out of the chair, and for a second I thought I was going to shove the monocle down the old man's throat. "I don't want to hear any more, do you understand me?"

"You know it is the truth. That is why you are so frightened of it."

"I'm not frightened!" I shouted, grabbing one of the end tables and swinging it back like a club. "I'm fine! Stay away from me!" I started backing toward the door.

Canard held out his hands. "Drake, listen, I must warn you—"

"No!" I yelled, throwing the table and running out the door. I ran all the way to the village and took the next flight home to Connecticut.

I write this at my father's desk. Next to me is a book entitled *Lycanthropy: A Symposium*, and next to it are perhaps a dozen others on the same subject.

I do not believe Dr. Canard's preposterous story. I do not believe in werewolves, wereducks, were-elephants or werefish.

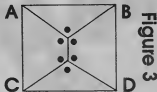
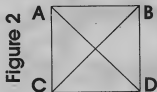
And yet . . .

I have read all of my father's books on the subject—brought them down from where they were hidden in the attic and studied them. The books tell me that the curse of the werewolf is passed on to the eldest son on his eighteenth birthday.

Tomorrow, on the night of the full moon, I will turn eighteen. Is it only the power of suggestion that has been leading me out for long walks beside my father's fish pond, or is it only the beginning of something far, far worse? ●



SECOND SOLUTION TO MONORAILS ON MARS



Most people suppose that the monorail network of minimum length, joining the four corners of a square, is the one shown in Figure 2. The total length is twice the square root of 2,000, or about 282.84 miles.

But this is not the best possible. The correct pattern is shown in Figure 3, where each angle with a dot is 120 degrees. It is a bit tricky to calculate the total length of the network, but it turns out to be the square root of 3,000 plus 100, or 273.20+ miles. This is slightly less than 282.84 miles.

Minimum-length networks joining points on the plane are known as "minimum Steiner trees" after a nineteenth-century German geometer named Jacob Steiner, who studied the problem. The general task of finding such trees for n points on the plane is unsolved in the sense that no efficient algorithm is known for obtaining them. (The task belongs to a famous class of unsolved problems known as NP-complete. They are so related that if an efficient algorithm is found for any one of them it can be applied to all the others.) The task is even more difficult for joining points in three dimensions. It is not easy, for example, to determine the shortest-length network joining the eight corners of a cube.

Our final puzzle was sent to me in 1981 by Yasuo Hakinuma, an 18-year-old student in Tokyo. Assume that the four Russian bases, $ABCD$ are on the corners of a perfect square in the following sense. If you travel due south 100 miles from A , you arrive at C . Going 100 miles due east from C puts you at D . Another 100 miles due north takes you to B , then 100 miles due west brings you back to A .

Where on Mars can the four bases be located? The answer (on page 106) is more surprising and more complicated than you may at first suppose.

CONCERTO IN B

DEMOLISHED

by Al Sirois



Al Sirois sold his first science fiction story to *Fantastic*, and he says that he thereupon spent several years struggling to be a freelance artist when he should have been writing. He now knows better, however.

Johann Sebastian Bach's patron, an informally dressed young man named Jon Bermont, cocked his head as the Heathrow Spaceport's PA system announced the on-loading of the lunar shuttle. "Herr Bach," he said quietly, "it's time we were going. Are you at all nervous?"

Sitting at ease in the spacious lounge with Bermont and his retinue, Bach's thoughts were primarily on the magnificent organ in the Royal Festival Hall, where he had given a command performance for the King a few hours earlier. He stood, allowing himself the luxury of moving slowly, enjoying the sight of the other people watching him. "Nervous?" he repeated, in German. "No. That first airplane flight, now, in truth *that* made my stomach flutter. Travel to the moon is but a matter of degree."

Bermont smiled. "This way, then." He led the way to the boarding chamber.

Surrounding the entry way was a crowd of reporters and media techs, shouting questions at Bach and Bermont. Bach ignored them; Bermont spoke a few words, referring to Bach's first spaceflight and well-earned vacation on the moon.

"Come on, that's not why he's going!" shouted a TV man. Bermont scowled and turned away as curiosity seekers, passengers from other shuttle flights, began to join the news people.

As Bach and Bermont entered the passageway leading to the Primary Airlock, someone broke away from the crowd. Bach recognized her at once and grimaced. Her long crinkly black hair framed an oval face, with a full mouth and aquiline nose. Bermont groaned and cursed under his breath. Bach glanced at him, and back at the young woman. She had a gun out by then—Bach knew what would happen, and he clenched his fists helplessly.

As he had expected, she raised the pistol and shot herself through her mouth, killing herself instantly.

Security personnel reached her just after she pulled the trigger. Bermont raged at them, "That's the seventh time! What the hell am I paying you for? You weren't supposed to let her get anywhere near him again!"

The satisfaction Bach had felt with his recent performance was now entirely soured. In acquiescent dismay he allowed himself to be led aboard the space vehicle.

"Even the reporters know by now that she's likely to show up," Bermont was saying to one of his aides as Bach buckled himself into the seat. "*Dammit*, she's getting bold!" Bach held himself aloof from the discussion, preferring to keep his own counsel, especially in these strange 21st century days. This much he had

learned from a long life: talkative people miss important subtleties. And he was nothing if not subtle . . .

Damn the woman! But then, he corrected himself, she wasn't a woman, really; she was a Replica. How else could she have so many *selves* to destroy?

Beneath him, somewhere in the engines of the machine, a groaning grew. Launch was mere minutes away.

The first time . . . he remembered it well. As he stood before the applauding throng at his third concert after Reawakening, a youthful woman with Semitic features stood up in the fifth row, and shot herself through the head. Clearly she was a deranged person . . . but, at his seventh concert, the *same* female again stood and shot herself. And again, at his tenth concert . . .

Her fourth suicide occurred outside a TV studio in Paris where Bach was being interviewed. The fifth, at a press conference . . . there, she had been disguised as a reporter.

The sixth suicide had taken place only the week before, on the street outside his residence in Los Angeles. And now, at the London spaceport, the seventh death.

She had made no attempt to *talk* to anyone. Bach had no idea who she was, nor why she was programming Replicas for suicide. He could have ignored the first few deaths as being the machinations of a lunatic. The 21st century had no shortage of such. But seven? So widely spread? Obviously, whoever the original was, she had great wealth.

"Merely a matter of degree," he muttered, scowling at the back of the seat in front of him.

"I beg your pardon?" asked Bermont, who was sitting next to him.

"Oh, nothing . . . nothing," Bach said hastily. "It's simply that I find some aspects of life in these times to be, shall we say, disturbing."

Bermont smiled thinly. "I hope you won't be disturbed by space-sickness, Herr Bach."

Bach had expected the subject change, knowing that Bermont was not disposed to discuss the suiciding Replica. He replied with a frown, and, closing his eyes, leaned back to await launch. The seat was very soft and comfortable—unlike most furniture in his past—and Bermont was unlike any of Bach's past patrons. He was as wealthy or wealthier than anyone with whom Bach had ever associated, yet he lived relatively simply. Bermont seemed to care most for his computing machines and the data which passed through them. Bach found Bermont utterly alien. The elite

who had employed the composer in the past had been comprised of royalty and titled people. The clergy had also been very powerful in those days. Now, these classes were almost totally eclipsed in power by the military and by scientists of certain types, particularly computer scientists. Very odd it all was . . .

Bach had almost drifted off into a catnap when the motion of the shuttle woke him. Although there were no viewscreens or windows for him to see, he was keenly aware that he was ascending into space. He felt an almost religious thrill at the sensation.

"Are you enjoying your vacation, Herr Bach?" asked the pale young woman who was, ostensibly, Bermont's secretary. Bach turned away from his contemplation of the bleak expanse of Tycho outside the window of his chamber.

"The view is magnificent," he said. "To see the entire Earth at once . . . yet no one looks but me. There is little else to recommend the moon. One may fly with artificial wings, but there is nothing else to *do*. There are no tourists here."

"I'm sorry," she said automatically while going through the daily pile of flimsies given her by Bermont.

"The low gravity makes me feel light-headed," Bach said, aware that she wasn't really listening, and not caring if she was or not. "There's no one to talk to. Bermont is always with the technicians. I have nothing in common with the others in my retinue . . . sycophants." He snorted. "There is no cultural life on the moon because there is no time for it. Life is so frenetic here! Research this, measure that. The synthesizers I have been given do not sound *right* to me. I prefer traditional instruments . . . and there is not so much as an organ on this entire satellite. Too massive to carry from Earth, they say to me. My soul! Too heavy!"

"Herr Bach," she said, holding a flimsy out to him, "you might find this of interest. It's an invitation from the Lunar Philharmonic."

He grabbed it, read it. A smile grew on his broad face. "Amateurs," he said, turning to look out at Tycho. "But musicians, nonetheless. This could be diverting, at the least. Tell them I'll be most pleased to attend their gathering." She smiled, distantly.

"I can't tell you what an honor it is for us that you've come to the moon," said the Philharmonic's conductor, George Bruce, as he took Bach's elbow to lead the composer into the chamber. "The

true clone of Johann Sebastian Bach! Of course, we're strictly a non-professional orchestra . . . but we're sincere."

Bruce introduced Bach around to the other members of the Philharmonic, reeling off a series of names which Bach forgot at once. He noticed that Bruce and the others all shared the same sort of glazed look about the eyes, and a general limpness of handshake. They all wore glasses.

"This is Rinehart, our bassoonist," said Bruce. "It's a real bassoon, too. Most of the other instruments we use are electronic because of mass restrictions."

"An honor," rumbled Rinehart, a very fat man with long lank hair. "Have you noticed, Herr Bach, that the air pressure here alters the sound of instruments?"

"No, I haven't played as yet," said the composer.

"Oh, would you play something for *us*?" asked the violinist, an elderly woman named Rittenhorse or Ritterhouse.

"I'm uh supposed to be on a vacation, here," Bach said. He sighed. "Although I suppose it's clear to everyone now that I'm actually being kept out of the way of a particular young woman . . ."

"Oh, yes, we'd heard about her!" Mrs. Rittenhorse pursed her wrinkled lips. "The poor thing."

Bach blinked. "Poor thing, indeed. I wish she'd leave me alone. Madam, all I have *ever*, all my life past, wanted, was to be left alone to work on my music." He sighed again, annoyed at himself for the uncharacteristic outburst. "Now, perhaps I will play something. Ah, is that a viola?"

"Oh, yes, it is!" exclaimed its owner, a balding chinless man who had been introduced as Patterson. "A computer-designed one, made specially for our pressurized ecosystem! Please, play it—I would be so grateful."

Saying nothing, Bach took the instrument in his hands. It felt familiar, yet alien. He sat and drew a deep breath. Then, falling into the old ways, he began to play, concentrating on the color and tone of the viola. Without thinking he essayed several bars from the Sixth Brandenburg Concerto.

Looking up, he saw that the members of the Lunar Philharmonic were staring at him. Awe, he noted, was in their eyes. "Perhaps the quality of this strange instrument's sound is not unduly disappointing."

"I can't say what it *means* to us to actually hear you play!" enthused George Bruce, clasping his hands at his chest. "Of course we've all heard many recordings of your works, but . . ." He shrugged.

Bach nodded. "All, of course, have been of previously written pieces." He paused, struck by an appealing idea. All his life, he reflected, he had composed according to strict rules which he had formulated in his youth. The rules were perforce based on earthly conditions. Now, on the moon, the rules could perhaps be altered to accommodate the new conditions. Something in the nature of a tentative experiment could be of use. "I had been thinking of a new work," he said slowly, stroking his chin. The Philharmonic was rapt. He suppressed a smile. "Yes, a new one, suited to my new life. While the abilities of the players may, ah, vary, nevertheless might I be able to score successfully for them. Perhaps a new concerto . . ."

"Oh, Herr Bach," said Bruce, brokenly. "I am speechless."

Bach bowed slightly. "Then, it were best to remain silent. If you will be so kind as to excuse me now, I would like to return to my quarters to begin my work."

Bach walked slowly back to his cabin, ignoring the chatter of his retinue. He would have preferred privacy, but Bermont forbade this on the grounds that Bach needed security. In his previous lifetime, Bach reflected, a man was respected, or he was not, and that was that. Security was not imposed upon one.

As he reached the door to his quarters, he realized that the thrust of the new concerto, as well as its music, would likely have to be altered. There were new ideas to be filtered through the music. Spaceflight, for one. Vast, powerful machines. The crushing poverty of the masses. Perhaps a new spiritual standard for these spiritless times when death seemed to be so uninteresting. How could one intellectualize, for instance, a continuing suicide?

Bermont was waiting for him in the room. Bach entered, irritated. Was there to be no privacy anywhere?

"Good evening," said Bermont diffidently.

Bach grunted. "Day, evening . . . it is the 'same, here, where the stars always shine. The sky is forever black. Hmph."

Bermont's eyes narrowed. "Are you troubled?"

"Troubled—no. I am thinking." He knew that Bermont would be most gratified by the news of the new concerto. Always the young man was asking, "When will you start composing again?" Bach was tempted to say nothing, but there was no point in being petty. So he told Bermont about his decision.

As he had expected, Bermont was pleased. His hatchet face lit up in a genuine expression of pleasure. "This is excellent news! Herr Bach, this is—ah. I can't express myself."

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"Then why bother?" Bach asked, sourly. "I need to be alone just now, if you please."

"Certainly." Bermont went at once to the door. He paused as he opened it, and grinned at the composer. "The world will honor you as it never has!" he promised.

"As you say. Just so it leaves me be."

Bermont grinned even more broadly, and was gone.

Bach had to admit to a certain satisfaction. All during his previous life he had been regarded as a superb musician, a player. This he knew himself to be, but he regarded his ability as purely mechanical. It was as a composer that he was a genius, and it was as a composer that 21st century Earth had come to know him. He was not displeased with the way history had preserved his memory. Now, of course, there was an entire new career to begin, a whole new life to lead. He began to drift into a musical reverie. Within an hour he had the basics of the concerto laid out in his mind. It was time to begin writing it down. Thank God they still knew what musical notation paper was, he reflected, as he reached for some sheets from the desk. Soon he was lost in the music.

On the "night" of the performance of the new concerto, Bach was annoyed to be reminded by Bermont that he needed to bathe.

"There is a distressing preoccupation with cleanliness in this day!" complained Bach from the shower. "In my time, we knew the poor from the rich by their distinctive odors. Sweat versus perfume. Clothes kept us warm, and there was no need to *wash* them every day or two."

"Times have changed, mein herr, as you might have noticed," called Bermont from the living area. For once he was dressed in formal attire, eschewing his usual nondescript garments. His voice was cheery. Bach knew that Bermont was a happy man. Towelling himself off, the composer tried to rid his mind of the nagging feeling that he was performing like some trained dog. That was silly—patrons were patrons. One worked for patrons, one did as they bid. How else could it be? Yet, yet . . .

It seemed to Bach that the entire population of the moon was assembled to hear the Philharmonic play. The meeting room, the largest chamber on Luna, was indeed full, but all 4000 people on the satellite would not have fit in it. Bach saw the TV cameras which would carry the sight of the musicians to the rest of the inhabitants, as well as to billions (the number was beyond even his true comprehension) on Earth.

He took his place among the violas, from which section he would also conduct. Silence fell over the assembly. Bach scanned the first few rows. The faces there were rapt in attention. He noted a black woman, one of the few blacks he had seen on the moon. Her face looked drawn, as if she were in pain. There was no time to wonder at this, nor did he care. Seeing that all was in readiness, he tapped the baton. The strains of the first movement floated into the air.

The performance went passably well. The number of gaffes on the part of the players was few. He had expressly refused the performance to be recorded: this would have to wait until it could be performed by trained musicians. Too, he felt that it needed some alterations here and there. The applause reverberated in the chamber, but he scarcely heard it, already revising the work in his mind. He was civil to the well-wishers, but as soon as was decently possible, he made his way back to his quarters. There he took up stylus and manuscript paper, and lost himself in work. For the first time since he had arrived on the moon, he was feeling content and at ease.

A sound behind him made him start. Turning, he saw that the connecting door to the adjoining cabin was open. Standing in the doorway was—he squinted, recognizing her—the black woman he had noticed at the concert.

He threw down the stylus in anger. "What are you doing here? Leave me. I have much to do." She was only a well-wisher, of course, but he was in no mood to be polite. Why couldn't they leave him alone?

"Of course you have," she said softly, and took a step into his cabin. Something was happening to her. "But so have I." The color was draining from her face. Astounded, he watched the chameleon-like change. He stood, shocked, knocking over the chair. It floated down absurdly. "You—you!"

It was the young woman from the spaceport in London, and all the other places. Now he saw that she had disguised herself with color and a wig.

A gun was suddenly in her hand. He clenched his fists. "You must not do this!" he grated.

She laughed. There was no humor in it. "I have no choice. Like you, I am a Replica. I must do what I am created to do."

"You're mad. I was grown from cells scraped from my old bones. I am a true human clone. You are a Replica, a computer-made android. I was force-grown. You were created as you are."

She laughed again. "Call your guards, meinherr. Call your guards."

He scowled. Yes, that was what he should do. But—"I would like to know why you do this."

She lifted the gun. "Kill myself for you? At last! I knew that if I did that enough times your curiosity would be piqued. I knew that there was no other way I would ever get to speak with you."

Bach stared at her. She was truly mad! "This is intolerable. How could you come here, from Earth?"

"Money can do anything," she said. She crossed the room and sat down. The gun was pointed at him, not at herself, he saw with cold clarity. This death was to be a different one, apparently. Coolly, he regarded her. He would not beg.

"There are government programs to get blacks up to the moon, and to the orbiting labs. I've got an extensive computer science background, and lots of money. Like your Mister Bermont, my family made a great deal of money in computers. It wasn't hard for me to alter the records here, add some data there. Cosmetics took care of the rest, and here I am." She smiled.

"You. Yet, you are not truly here. You are a Replica. Where is your true self?" He righted the chair and sat in it.

She stopped smiling. "She's in London, where she lives. You know, I can remember each death. All of those others, they all recorded their lives. In here." She tapped her chest. "Simple to do. You know I'm only an android, part machine, part bio. Just like you."

"I am not—"

She raised the gun. "You *are*. It's what I've been dying to tell you. You see, you are the best. You are an experiment."

"I am a human being."

"Of course you'd think so. Your memory load takes care of that. There's a program which is *you*. A psychological profile, if you like. For any situation in which you find yourself, this program monitors you and supplies you with the most likely reaction, based on what Johann Sebastian Bach would have been apt to do."

He stared at her, his fury growing. Still, he had to know what she was after. "There must be more to your insanity," he said flatly. "Why tell me this? Why lie about it?"

"Lie? I'm trying to tell you the truth! It's Bermont who's been lying!"

"Bermont?"

She nodded.

"So—why tell me these things?" he asked slowly.

"Because I hate you!"

The venom in her voice surprised him. Her face was a mask of cruelty. "But . . . why?" The question was whispered.

"You are a lie! I have loved your music all my life. I studied it, learned to play it. I mean, my *self* did, in London. You were the finest composer who ever walked the planet, and they've brought you back as a plaything! All this, your new life, is an outgrowth of a trend which began decades ago. Have you heard of the Beatles? Yes? They were so popular that after they broke up, tribute bands formed which played their music exclusively. They were called 'clone' bands, though there was no commercial cloning then. You've been told you're a true clone, but you're not."

"Not my mind, no," he agreed, triumphantly. "I remember dying . . . in 1750. I have seen your machines which reached back and scanned my mind as I lay in a coma. When my clone body was fully grown, my taped memories were played back into it. I awoke, my mind whole in a healthy new body."

"Herr Bach . . . there are *no such machines*. We do not have the ability to scan the past. You've been set up to *believe* that there are, so as to not conflict with your programming."

"A lie!" He wanted to strike her. "I *remember* it!"

She shook her head. "Memory loads, again. It's all been tailored specially for you. You are an amazingly expensive article, mein-herr. You could not be allowed a free will, a true memory."

"And why not?"

"Don't you see? Your new music must be as much *you* as possible. It was never meant to be artificially composed."

"I do not understand this." His thoughts seemed leaden. She was mad, mad! He was not a Replica. He felt alive, conscious. "I am real. I live!"

"As do I. But you are no less a tool. My self grew to hate you. You are no more the real Bach than I am my real self." She laughed bitterly. "We are tools. We are Replicas."

"The music—" He remembered the new concerto. "You heard it! I composed it. Well?"

"No. No. I'm sorry." She grinned. "Your monitoring machines composed it. You're like one of the old audio-animatronic figures, maybe a little more sophisticated. Your music is not new. And that's what my self hates. Bach is dead—his music is done. There is no more. But *your* music will be touted as a continuation of *his* work."

"Damn you! *It is my work!*"

She looked at him. "No, it is not." He stood and took a step

toward her. She said, "Be careful. Listen: your career was funded by people who wanted you to write specific things for them. Because you had to make a living, you did it. What you wrote and played has become great art, great music! But the belief that those were the right rules to compose by has lasted until today."

"What do you mean?" He was interested in spite of himself.

"This: present-day musical criticism is based on the classical parameters of centuries past. Nothing new gets done! And *you* are the embodiment of it all. You represent something new, but not risky. You were designed to compose in the same mode as you always had."

He stared at her. "I have a free will."

"No you don't. The computer slides your feelings in. Oh, there's a random element . . . they don't want you endlessly reworking the Tocatta and Fugue in D minor, for instance . . . but even that has been given a specific domain."

"And so you are saying that Bermont . . ." he paused, unwilling to continue the thought. (Or, he realized with a chill, *unable* to continue it.)

"Yes, Bermont developed your programming. Your body . . . well, that was special. Your neural circuitry alone cost several hundred megabucks. You are expensive, believe me! He couldn't take any chances."

"Surely your 'self', as you term her, could not spend so much money . . ."

"That's right. My self plays piano and organ and harpsichord, all expertly. I have no need of that dexterity. I don't have to do much more than walk, talk, and pull a trigger. Oh, I have her personality and memories. Do you understand what that means? I can remember being able to play your music, but I cannot do it in this body. Yet I have the feel for it, the love . . . and I *hate* that! It's how she gets us to be able to kill ourselves so willingly."

This trickled into him. This was a monstrosity, he realized. The Replica had been created without the "self's" music. He saw the source of the mania in her eyes. The self must be a terribly cruel person, to so thoughtlessly cripple this Replica. Yet, the Replica was a tool, to be used and discarded.

He shook his head in confusion. Could it be that Jon Bermont regarded *him* as a tool? "Still, she spent much money on you."

"She did that. She despises you as a Replica, as the lie of a dead genius. She wants you to know what you are. She wants you to know that the free will that you think you have is an illusion, bought and paid for."

The words bit into his brain. He could not admit any truth in them, to save his sanity. "Lies, lies!" he shouted. The words echoed in the cabin. He tensed, as for a leap, and saw the gun pointing at him.

(If it were all true, then his death would cheat Bermont of all that money and time. And wouldn't that be good?) (She's a mad-woman; I must be free to make my music again! Death has been rolled back for me!) (You're a lie, you're a lie!) Hardly knowing what he did, he dove for her, reaching for the gun.

The gravity slowed him so—she laughed as she raised the gun, put the barrel in her mouth, and pulled the trigger. There was a silent burst of light, punctuated by Bach's frustrated shout. The tears in her eyes boiled.

As he struck her lifeless body and tumbled with it to the floor, Bach saw the guard throw open the door. The man's eyes went wide and he spoke rapidly into a communicator. By the time Bach picked himself up from the floor, Bermont had hurried into the room. The girl's body was being carried out.

"Lisa, Lisa, you bloody goddamn fool," Bermont was saying, as he watched the corpse taken away.

Her blood was splattered across Bach's tunic. "You know her," he said to Bermont.

"Yes, yes . . ." said Bermont, his voice faint. "I . . . we were once very . . . we thought we . . . we were close."

Bach eyed him. So: both were computer scientists, and wealthy. They shared an interest in music. They had moved in the same circles. Jealousy, revenge. Lovers did feel these things. "You left her," Bach said. How else could it be, for her to hate him so?

Bermont seemed to come to himself. "It's none of your concern, Herr Bach." His customary brusque manner had returned. "In any event, it was years ago."

"Not for her."

Bermont glanced sharply at the composer. "What lies has she been telling you?"

"Lies? Why do you assume she talked to me?"

"She slipped past the guards, disguised . . . all the security devices were bollixed. Only Lisa would know how to do that. Every other time she killed herself at a distance. This time she got right in here. What did she say?"

Bach said nothing. He turned to stare out of the window. The Earth hung over the dead dust of Tycho. It was coldly lovely. Bach scowled. The Replica was dead, but the self, this Lisa, lived on. He remembered her face, her hair. "She raved of music and dead

composers," he said flatly. The technicians would find out soon enough about the conversation, if he was monitored. Then Bermont would have his proof.

Would Lisa go on trying? Would she spend and spend and kill and kill until she completely destroyed herself—or until she succeeded in overriding Bach's programming?

He felt very cold, and very small, watching the Earth so many miles away.

One works for a patron . . . must one live for him, as well? "I believe that she will continue this suiciding," Bach said softly.

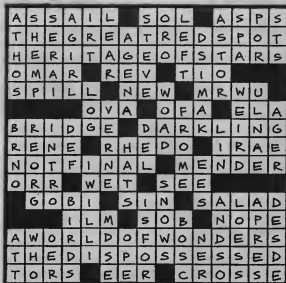
To himself, he added, *I hope so. God, my God, I hope so.* ●



Asfm Puzzle #6

from page 30

BY JOVE!



THIRD SOLUTION TO MONORAILS ON MARS

North Pole

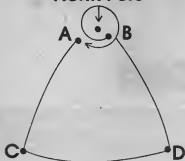
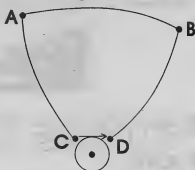


Figure 4

Figure 5



South Pole

One obvious answer is that the square can be anywhere straddling Mars's equator, with base A 50 miles north of the equator. But this is not the only answer. There are an infinite number of other spots!

For example, A could be so close to the north pole that when you go due west from B to A, the monorail circles completely around the pole as shown in Figure 4. Of course A could be even closer to the pole, so that it takes two trips to go due west around the pole from B to A, or three trips, or four, and so on.

The same scheme applies to locations of the square near the south pole. As shown in Figure 5, A could be so close to the pole that if you travel due east from C to D you circle the pole once, or twice, or three times, and so on.

To summarize: there is an infinite set of solutions on the equator, an infinite set near the north pole, and an infinite set near the south pole. If you are skilled in geometry and algebra, you'll find it a challenging task to derive a formula that gives all the distances A can be from the north pole, and a similar formula for all of A's distances from the south pole.

THE SEVENTEEN-YEAR LOCUSTS

by Charles Sheffield

The author says that he started to write in 1976, had his first story published (in *Galaxy*) in 1977, and his first novel, *Sight of Proteus*, in 1978. He also has a nonfiction book, *Earthwatch*, out from Macmillan.

art: Marc Yankus



The Seventeen-Year Locusts occupy a special place in the Washington scene. As a natural event, they induce in even the least imaginative visitor a sense of wonder at the utter strangeness of Nature.

For sixteen years, the U.S. capital has the usual swarms of cicadas. In July and August they fill the warm and muggy summer nights with their chirping and chittering. Then comes the seventeenth year. The locusts awaken in their hiding places un-

derneath the tree roots and begin to crawl up out of the damp ground. For a few weeks they cover every tree and every shrub, so you cannot walk in the garden without trampling them underfoot. At night they make a noise loud enough to drown the low-flying aircraft on their runs along the Potomac to National Airport.

Why seventeen years? No one knows. It may be some unfathomable confluence of natural events, a resonance of the planetary orbits. Or is it a precise biological chronometer, ticking away inside the pinhead brain, to bring them out in the exact week of that seventeenth summer? No one knows. Once in position on their twigs, they seem quite happy to sit motionless, green bodies and bright red eyes.

The Seventeen-Year Locusts seem to serve no useful purpose. If they did not exist, it would be by no means necessary to invent them. They do not bite or sting, and if they suck the sap from tender young twigs, the evidence of that is all gone in a couple of years. They do not scourge the earth, for the name "locust" is only a popular alternative to the more academic "periodical cicada." Perhaps their only function is to separate the old-timers in Washington from the new hands. "You don't know about the locusts? Why, that means you weren't here in 1969. They'll be back in 1986. Just hang around a while." And then the arguments start, as other natives insist that they were last here in 1968, or in 1970. Unlike the locusts, the Washingtonians seem to lack that precise memory and timing.

The insects themselves take no interest in the arguments, or indeed in much else. As one might expect, they seem confused by everything. They popped down for a nap when Nixon was running the show, when gasoline was thirty-five cents a gallon, and when *Laugh-In* was a top TV show. In 1986, some unknown has appeared as president, gas is up to eight dollars a gallon, and TV sets are used only to play electronic games.

"What's going on here?" they say to each other. "Close your eyes for a minute in this town and next thing you know you feel like a complete outsider."

Confusion is probably their main worry. I have my own concerns—ones that may explain another of Nature's great mysteries.

I see the day coming when the Earth will tremble and crack into huge, mile-deep fissures. People in Washington—who value curiosity more than anything, even life itself—will go to the edge and look down. Then they begin to scream and run about wildly.

It is quite useless, because they cannot escape. They are gripped in the monstrous jaws, lifted high in the air, torn apart and eaten. The Fifty-Million-Year Dinosaurs are back in town. ●

DWARFS TO GIANTS: IKEYA & SEKI

No modern samurai were they:
An aged teacher of guitar who wore
Electrified slippers on his rooftop observatory;
A boy haunted by shame and the dream
Of a comet in a hand-made telescope.

Yet they tied a string on the finger of astronomy
By erasing once more,
As does the tide in its effects
Upon the gentle Japanese shoreline,
The thin line between professional and amateur.

—Robert Frazier



This is Part Two of the author's upcoming book, *The Crucible of Time*, which will be published in 1983 by Ballantine/Del Rey. Part One, "The Fire Is Lit," appeared in our September issue, but you needn't have read that one to appreciate this. Enjoy.

art: Odbert



FUSING AND REFUSING

by John Brunner

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After half a score of days the storm was over. Weather-sense and a familiar, reassuring noise lured Skilluck back from the dreamness whither he had been driven by exposure, privation, and sheer terror. Slackening his mantle, he relaxed his death-grip on the pole he had clung to while he was reduced to primitive reflexes, concerned only to escape the fury of the elements as his ancestors might have hidden from a predator larger than themselves.

The sound he had recognised was the unmistakable munch-and-slurp of Tempestamer feeding.

Weak exultation filled him. Surely she was the finest briq ever to set forth from Ushere! He had pithed her personally with all the expertise at his command, leaving untouched by him the prong nerves which other Wego captains customarily severed. At first his rivals had derided him; then, however, they saw how docile she was, and how fast she grew, and in the end came begging a share of his knowledge, whereupon it was his turn to scoff. Now she had proved herself beyond doubt, for she had defied the worst weather in living memory and—he looked about him—brought her crew to a safe haven, in a bay landlocked among low hills and sunlit under the first cloudless sky he had seen in years.

But where that haven was, the stars alone could tell.

With agony stabbing through his every tubule, he forced himself more or less upright, though it would be long before he regained his usual height, and uttered a silent blessing for his name. Those of his companions who had been called by opposites—Padrag and Crooclaw—had been lost overside on the third day of the storm. But the rest, better-omened, were in view, though still unaware: the boy Wellearn, whose first voyage had come so near to being his last, and Sharprong, and Strongrip, and Chaplain Blestar. . . . Was the chaplain also alert? His voice could be heard mumbling, "Let each among us find his proper star and there add brightness to the heavens in measure with his merit in the world . . ."

But—no. His prayer was mere reflex. He was still lost between dream and imagination. And in a bad way physically, too; his mantle was bloated and discoloured, a sure sign of cresh. The same was true of the others, and Skilluck himself.

For an instant the captain was afraid he might be dreaming after all, that he was so near death he could no longer distinguish

reality from fantasy. But in a dream, surely, he would seem restored to health.

His pain was receding, although the areas where he had rubbed against the pole during the storm would remain sore for a long while. He forced himself to set out on a tour of inspection. One piece of essential equipment remained functional: the northfinder, tethered in its cage, responded weakly to his order and uncoiled itself in the correct direction. Also his precious spyglass had been so tightly lashed to a crossbar, all the gales and waves had not dislodged it. That apart, things looked grim. Most of Tempester's drink-bladders had burst, the trencher-plants had been so drenched with salt water they looked unlikely to recover, the vines had been torn bodily away leaving raw scars on the briq's hide, and—as he already knew—their reserves of fish and pickled weed had been used up.

He sipped a little water from an intact bladder, struggling to make plans. Food must come first, and more water. Were there edible plants on this strange shore? Was there any chance of trapping a game-animal? He needed the spyglass to find out. But his claws felt weak and clumsy, and the rope was swollen with wet; the knots defied him.

A shadow fell across him. He glanced round, expecting Sharprong or Strongrip. But it was young Wellearn who had joined him, hobbling along at barely half his normal height.

"Where are we, captain?" he croaked.

"No idea, but I'd rather be here than in mid-ocean. Take a drink—but slowly! Don't try and put all your fluid back at one go, or you'll burst a tubule. Then help me untie the spyglass."

Despite the warning, he had to stop Wellearn after several greedy gulps.

"There are three more of us, you know, and only three full bladders!"

Wellearn muttered an apology and turned his attention to the knots. After much difficulty they loosened, and Skilluck unwrapped the hide around the tube.

"Take drink to the others. But be careful. The state they're in, they may not know the difference between you and food. Or themselves, come to that. I guess you never saw anyone with cresh before, hm?"

"Is that what we've got?" Wellearn's eye widened in horror. "I heard about it, of course, but—well, what exactly is it?"

"Who knows? All I can say is, I've seen a lot of it at sea when our trencher-plants got salt-poisoned and our vines were blown

away, same as now. Most people think it comes of trying to live off stale pickles. Makes you leak, drives you into dreamness, kills you in the end. . . . Oh, curse the weight of this thing!" Skilluck abandoned his attempt to hold up the spyglass normally, and slumped forward in order to rest its end on the side of the superstructure. "But we'll be seeing cresh on land again one of these days, if the winters go on getting longer and harsher and seeds don't sprout and fish don't run. . . . But you shouldn't worry too much about yourself. It always hits the biggest and strongest first and worst. Dole out a sip at a time and be especially wary of Blestar—he's delirious."

Carefully filling a gowshell from the drink-bladder in use, Wellearn heard him continue, mainly to himself: "Not a trencher-plant to be seen. Don't recognise a single one of those trees, don't spot a single animal. No sign of a stream unless there's one behind that cape . . ."

The boy shivered, wondering whether his own mantle was as patched with creshmarks as the others', and the captain was speaking only to reassure him. All things considered, though, he felt remarkably well after his ordeal: weak and giddy, of course, so that he wondered how he would fare if he had to leap clear of a cresh-crazed crewman; thirsty in every fibre of his being; and hungry to the point where he wished he could browse on floating weed like Tempestamer. Yet he was still capable of being excited about their arrival in this unknown region, and that was an excellent sign.

So Skilluck must be telling the truth. Sharprong, on the other claw, was almost too ill to swallow, and neither he nor Strongrip had the energy to attack a helper. Ironically, Blestar was worst off of them all, his mantle cobbled with irregular bulges as though it were trying to strain outward through a badly-patterned net. He was talking to himself in a garbled blend of half a dozen learned idioms. Wellearn recognised them all; it was his quickness at languages that had earned him a place among the crew. Their mission was to trade hides for food-plant seeds in the hope of cross-breeding hybrids which would grow very quickly during the ever-shortening northern summer. Many briqs this year had scattered on the same quest. If it failed, the Wego might have to move south *en masse*, and the hope of finding habitable but unpopulated lands was very slim. So there would be fighting, and the weakened northerners might lose, and that would be the end of a once-great folk. At best they might leave behind a legend, like Forb or Geys or Ntah . . .

Tormented by the sun, Blestar was reflexively opening his mantle as though to roll over and cool his torso by evaporation. Wellearn had never been in such a hot climate before, but he knew enough to resist the same temptation; in their dehydrated state it could be fatal. Anxiously he wondered how he could provide shade for the sick men, and concluded there was no alternative but to untie one of their precious remaining bales of hides. The outer layers were probably spoiled, anyway.

He contrived to rig two or three into an awning; then he distributed the rest of the fresh water and returned to the captain, dismayed to find him slumped in exhaustion.

But he was alert enough to say, "Good thinking, young 'un. Give me a little more water, will you? Even holding up the spy-glass has worn me out. And I don't see very clearly right now. We'll have to wait until Tempestamer has finished feeding and see if we can make her beach herself."

"Sharprong told me she hated that," Wellearn ventured.

"Oh, she does, and I'd never try it normally, of course. But that's our only hope; we've got to get ashore! Maybe while she's digesting she'll be tractable. Otherwise I'll have to pith another of her command nerves, and if I miss my mark because she bucks and bolts, then the stars alone know how we'll find our way home . . . Did you give water to the northfinder?"

"I didn't think of that!" Wellearn exclaimed, and hastened to remedy his oversight.

Returning, he looked at the ruptured drink-bladders, wondering whether any were likely to heal. But they were past that, hanging in salt-encrusted rags. In time Tempestamer would grow new ones, but it might be a score of days before they were full enough to tap. There was only one thing to be done.

"I'm going to swim ashore," he announced.

"You *have* got cresh! You'd never make it." Skilluck brushed something aside. A strange kind of winget had settled on him; others, all equally unknown, were exploring the briq, paying special attention to the scars left by the uprooted vines. It was to be hoped they were not in breeding phase, for the last thing Tempestamer needed right now was an infestation of maggots.

It occurred to Wellearn that in these foreign waters there might be creatures as hostile as the northern vorax, but Tempestamer showed no sign of being pestered by any such. He answered boldly, "There's no alternative! If I don't find water I can at least bring tree-sap, or fruit, or—or something."

"Then unlash a pole to help you float," Skilluck sighed. "And take a prong in case a waterbeast attacks you."

After that he seemed to lose interest in reality again.

The water was deliciously cool as Wellearn slid overside, but he was aware how dangerous salt could be to someone with a weakened integument, so he wasted no time in striking out for shore. His mantle moved reluctantly at first, but he pumped away with all his strength, and the distance to land shrank by a third, by half, by three-quarters . . . It was more than he could endure; he had to rest a little, gasping and clinging to the pole. To his horror, he almost at once realized he was being carried seaward again, by some unexpected current or the turn of the tide.

Although fatigue was loosening his grip on reality, he resumed swimming. The sunlight reflected on the ripples hurt his eye, and salty splashes stung it; countless tubules cried out in pain at being forced to this effort without sufficient fluid in his system; fragments of dream and all-too-vivid imaginings distracted him. He wanted to rest again, relying on the pole, and knew he must not. At last he let it go, and the prong with it, for they were hindering too much.

After what felt like a lifetime, smooth rock slanted up to a little beach, and he crawled the rest of the way as clumsily as a new-budded child. Cursing his bravado, he forced himself across gritty sand that rasped his soft torso, and collapsed into the shade of bushes unlike any he had ever seen before. Some sort of animal screamed in alarm and branches fluttered as it fled; he could not tell what it was.

In a little, he promised himself, just as soon as he recovered his pressure, he would move on in search of water or a recognizable food-plant, or risk sampling something at hazard, or . . .

But he did not. After his exertions, cresh had him in its deadly grip, and he departed into a world of dreams compound of memory, so that the solid ground under him seemed to rock and toss like the ocean at the climax of the storm. He did not even have the energy to moan.

From the brig Skilluck saw him fall, and let go the spyglass with a curse, and likewise slumped to his full length. The pitiless sun beat down, and all unheeding Tempestamer went on gulping weed to cram her monstrous maw.

He was looking at himself.

Wellearn cried out. He had seen his reflection before, but only in still water, which meant he should be lying down on the bank of a pool. Every sense informed him he was in fact sitting up. Yet his image was confronting him. He was certain it must be confect of dreamness.

Suddenly it swerved aside and vanished. Struggling to accept that he was not after all lost in sickness-spawned delirium, he discovered he was now seeing two people taller, slimmer, and with paler mantles than his own folk: a grave elderly man and a most attractive girl.

The former said something Wellearn did not quite grasp, though a tantalising hint of meaning came across. Then, touching his mandibles with one claw, he said, "Shash!"

Imitating him, the girl said, "Embery!"

Clearly those were their names. Wellearn uttered his own, followed by greetings in his native speech. Meeting no reaction, he switched to others, and as soon as he tried Ancient Forbish Embery exclaimed in amazement.

"Why, you speak what we do!" she said, her accent strange but her words recognisable.

How then could Wellearn have failed to understand before? And now again, as she said something too rapid to follow?

"The language changes," Shash said slowly and clearly. "It has been a score-of-score years since our ancestors settled here. Use only the oldest forms. Wellearn, you comprehend?"

"Very well!"

"Do you remember your voyage hither?"

"The greater part of it." But where was here? Wellearn looked about him, realising for the first time that he was in a noble house. Never had he seen such magnificent bravetrees—except they weren't exactly bravetrees—or such a marvellous array of secondary plants. Had he been hungry, which to his amazement he was not, he would at once have asked to sample the delicious-looking fruits and fungi which surrounded him. Light slanted through gaps between the boles, which offered glimpses of what looked like a great city. The air was at high pressure and very warm, though not so oppressive as when he swam ashore, and the scents borne on it were absolutely unfamiliar. But one matter must take precedence over the curiosity that filled him.

"My companions! Did you save them too?"

"Oh, yes. They are sicker than you, but we hope to cure them soon."

"But I had cresh . . ." Wellearn hesitated. In his people's knowledge there was no remedy for that affliction. Sometimes it went away of its own accord, no one knew why; more often its victims were permanently crippled.

"No longer. You saw for yourself. Where are the marks?"

"I saw," Wellearn agreed slowly. "But I didn't understand."

"Ah. Emberry, show him again."

This time he was able to make out how it happened. She held up a large disc, very shiny, which gave back his reflection. Touching it diffidently, he discerned a peculiar coolness.

"Metal?" he ventured.

"Of course. But your people understand metal and glass, surely? We found a telescope on your brig, as good as our own."

"Captain Skilluck got it in trade," Wellearn muttered. "I can't say where it was made."

"Do you not know and use fire?" Shash demanded in surprise.

"Of course, but in our country there is little fuel and it's too precious to be used for melting rocks. Long ago the weather, they say, was warmer, but now in winter the sea freezes along our coasts, and then it's our only means of staying alive."

"Winter," Emberry repeated thoughtfully. "That must be what we read about in the scriptures, the time of great cold which happens once a year and lasts many score days."

And yearly it grows longer . . . Wellearn suppressed a pang of envy. What a privilege to live in latitudes where winter never came! He had heard tales about such places from boastful old seafarers, but he had never expected to wind up in one on his maiden voyage.

Yet those same travellers always claimed that they found something grand in the country of their budding, something noble and challenging about its harsh landscape. He must not think of *worse* and *better* until he knew much more.

"May I see my companions?" he requested.

"Certainly, if you're fit enough," Shash answered. "Can you stand?"

Wellearn concentrated on forcing himself upright. He managed it, though he could not regain his normal height yet. Even had he done so, he would still have been overtopped by these strangers, who must be as tall as the mythical Jing—or maybe not quite, for he was said to have been taller than anybody.

"Let me help you," Emberry offered, moving to support him.

Contact with her was very pleasant. He wondered what the local customs were concerning mating. The Wego themselves welcomed visitors in the hope that outcrossing would bring more and healthier children, for they were barely keeping up their numbers, and he had been told that many foreign peoples felt the same. But it was too soon to think of such matters.

In an adjacent bower Skilluck lay in a crotch made comfortable with masses of reddish-purple mosh; he was still not alert but the crashmarks were fading from his mantle. Others beyond held Strongrip, Sharprong, and Blestar who was visibly the worst affected.

"I've never seen such a severe case," sighed Shash. "One could almost imagine he had weakened himself deliberately."

Wellearn nearly admitted that in fact he had. It was the custom of chaplains, in face of danger, to fast in the hope of being sent a vision from the stars that would save them and their comrades. There was no recorded instance of that happening, but the habit endured.

These people, though, might have no faith in visions, and he did not wish them to mock the strangers who had fallen among them. Instead he voiced a question that was burning in his mind.

"What manner of place is this?"

"A healing-house," Shash replied, and added wonderingly, "Do they not have such in your country?"

"A great house like this, solely for sick people? Oh, no! We're lucky to have enough for those who are well. Sometimes the houses die, and the occupants must take refuge in caves, or pile up rocks for shelter . . . I'm amazed! When we arrived in the bay, we thought this region was uninhabited!"

"Ah, you were the wrong side of the cape. People rarely visit that bay except for glassmakers needing sand or fish-hunters like the ones who spotted your briq."

"Tempestamer!" Wellearn clenched his claws. "What of her?"

"We have small knowledge of matters of the sea, but we have guarded against her wandering off by fixing strong cables across the mouth of the bay. However, she's so huge . . . Will it be long before she needs to feed again? She's practically cleared the bay of weed."

"I'm afraid you'll have to ask the captain. Usually she just feeds as she swims along, but she must have been half-starved after the storm that drove us here."

"Hope then that the captain recovers shortly. We're doing our utmost for him. Look, here come curers with more creshban."

Wellearn turned in the indicated direction, but almost literally while Shash was speaking, it grew dark. He gasped. Then festoons of luminous creepers reacted, faster than any gleamers he was used to, coming up to full brightness nearly before his vision adapted to the lower light-level, and he saw two husky youths each bearing a round object like an immense nut. There was a sudden pungent smell, which reminded him of a taste that had haunted his long period of dreamness. Also he recalled terrible hunger, and having to be restrained for fear he might attack those who were helping him . . . But that belonged to the past, and in the present Shash was saying, "You must continue the medicine for several days yet. Drink some more now."

Wellearn complied. The nuts were hollow, and contained a bitter liquid of which he managed a few gulps.

"If we could only plant such nut-trees on a briq!" he muttered.

"It's not their natural juice," said the curer who had given him the drink. He spoke without Shash's deliberateness but by this time Wellearn was adjusting to the local accent. "It's mixed with sap from half a score of plants."

Visions of saving the lives of countless future mariners bloomed and wilted in Wellearn's imagination. He said grumpily, "And I suppose not one of them grows in the north?"

"Later we can show them to you and let you find out," Shash promised. "But now I think you should return to rest."

"I couldn't! I'm too eager to see the marvels of your city, and meet more of its people!"

"In two or three days' time, perhaps. Not right away."

"May I not at least look out at the city, and question someone about it?"

"I'll oblige him, father," Embery said, and added self-mockingly, "That is, if he can understand me."

"In my young days," Shash sighed, "people your age were wise enough to know when their elders were giving them advice for their own good. . . Oh, very well! But remember, both of you, that the workings of cresh are insidious, and over-excitement is as fast a route as any into dreamness!"

Embery guided Wellearn to the crown of the highest tree in the house, which offered a clear view in all directions. The moon was down and the sky was clouding over in a way that upset his weather-sense, but he was too eager to worry about the risk of

a lightning-strike. From here the outline of the city was picked out by glowing creepers and fungi, and he was shaken by its huge extent. It even marched over the crest of a hill inland, beyond which faint redness could be seen.

"That's where the fireworkers live," Embery explained. "They make glass and metal—they made the mirror you've seen. The area is sheltered, the wind almost always carries the smoke away from us, and it's easy to find fuel in that direction. They use vast quantities, you know. Some of their furnaces— But you have to see them."

Over and over she said the same, when describing the outlying farms, the giant nets which fish-hunters hurled by means of weights and long poles far out to sea from the nearby capes and islands, the work of those who bred mounqs and draftimals—"like your briq," she added merrily, "only smaller and going on land!"—those who trained new houses to replace old ones or spread the city on fresh ground, and more and more until Wellearn could scarcely contain himself. How desperately he wanted to explore every nook of—

"I haven't asked your city's name!" he exclaimed.

"Hearthome."

It was apt. "How many people live here, do you know?" he pursued, thinking perhaps not a great number, if each of five sick strangers could be allotted a separate bower, and then yes a great number, if so many extra houses had been sown.

"Nine score-of-scores, I think, though some say ten."

It was unbelievable. The Wego numbered perhaps a fifth as many. Oh, this *must* be a better land to live in!

"But there are far larger cities inland and all along the coast," Embery said. "Many have a score-of-score-of-scores. None is as rich as Hearthome, though."

"Why is that?"

"Because we are the folk who work hardest at discovering new things. Travellers from many months' journey away come to learn from people like my father, and my uncle who lives yonder"—she pointed in a direction diametrically opposite the furnace-glow—"and devotes his time to studying the stars."

Among Wellearn's people the stars were of little save religious interest. During his entire life at home he had seen a clear sky so seldom he could almost count the total. Before the adoption of the northfinder—a creature which, properly pithed, would always seek out the pole—it was said mariners had been guided by the stars on outward voyages. The return, of course, was never a

problem; briqs like Tempestamer could be relied on to retrace their course. Though after such a tremendous storm even she . . .

Dismissing such gloomy thoughts, albeit making a firm resolution to utter thanks, just in case, to the ancestors who—according to the chaplains—must have been watching over him during the voyage, he made shift to repeat a traditional Forbish compliment which Blestar had taught him when he was first apprenticed to the trade of interpreter, and of which mention of the stars reminded him.

"Ah!" he said. "Starbeams must shine on Hearthome even when the sky is cloudy!"

"Why not?" Embery returned. "After all, we are honest followers of Jing."

Wellearn drew back, startled.

"But he was only a legend! Tales about him are compound of dreamstuff!"

"Oh, no!" She sounded scandalized. "True, there is a great dream in his scriptures, but even that is in perfect accord with reality. Have you never studied his teaching?"

At the same moment thunder rolled, but it was not the shock to his weather-sense which made Wellearn's mind reel.

"Your father was right after all about my need for rest," he husked. "Kindly lead me back to my bower."

Where he spent long lonely hours wondering what—after teaching and believing all his life that tales about folk who conjured secrets from the stars were mere superstition—Blestar was going to say when he discovered himself in a land where Jing was real.

III

Skilluck's shattered mind crawled back together out of pits of madness and he could see a figure that he recognized. It was Wellearn, addressing him anxiously: "Captain, you're alert again, aren't you?"

Beyond him, unfamiliar plants hanging on what were not exactly bravetrees, immensely tall strangers whose mantles were astonishingly pale . . . They coalesced into a reality, and he was himself and whole and able to reply.

"Tell me where we are, and how Tempestamer is, and how these people treat us."

He was proud of being able to phrase that so soon after regaining normal awareness.

Wellearn complied, but half the time he was almost babbling, plainly having been cozened by the wonders of his first foreign landfall. Skilluck was a mite more cynical; he had spent half his life travelling, and more often than not he had been cheated by the outlanders he tried to deal with. The harsh existence led in northern lands was no school for subtleties of the kind practised by those who dwelt in southern luxury . . . and it had been obvious, when Tempestamer came to harbor, that she had been driven further than any of the Wego had wandered before, perhaps to the equator itself.

So he merely registered, without reacting to, most of what Wellearn said, until a snatch of it seized his interest.

"—and they have a certain cure for cresh!"

At once Skilluck was totally attentive. Cautiously he said, "It works on everybody, without fail?"

Mantle-crumpled, Wellearn admitted, "Not on all. Blestar, they say, may well not survive. But for me and you, Sharprong and Strongrip, it's proved its worth!"

"Do they understand what we're saying to each other?"

"N-no! And that's something else amazing!" Wellearn blurted. "I have to speak to them in Ancient Forbish!"

Skilluck was unimpressed. His explorations had often brought him to places where relics of that once-widespread speech survived. Blestar even maintained that many Forbish words had found their way into Wegan, but since they all had to do with fire and stars—things everybody knew about, but in which the chaplains claimed a special interest—sensible people dismissed such notions as mere religious propaganda. Wego seafarers took chaplains along much as they carried pickles: just in case. The best trips were those where they weren't needed.

Of course, their services as interpreters . . .

He forced himself to sound very polite when next he spoke to Wellearn.

"It seems we should behave to our hosts in the friendliest possible fashion. I guess at something we might do for their benefit. How goes it with Tempestamer?"

"That's what I'd just been asked to tell you! She has grazed the bay where we landed clean of weed, and the cables they've strung across its mouth won't hold her much longer, and they fear for their inshore fishing-grounds."

"Let the cables hold but one more day, and I'll put her to sea and feed her such a mawful as will content her for a week. And

I'll come back, never fear. A cure for cresh—now that's something worth making a storm-tossed voyage for!"

"There's more," Wellearn said after a pause.

"So tell me about it! Anything we can trade for, I want to hear!"

"I'm not sure it's the sort of thing one can trade," Wellearn said. "But . . . Well, these people have shown me Jing's original scriptures. Or not exactly the originals which might rot, but accurate copies. And they tell about how the stars are fire and our world will one day go for fuel to make the sun brighter and ourselves with it unless we—"

Skilluck had heard enough. He said as kindly as he could, "Boy, your brush with cresh has affected your perceptions. I counsel you to concentrate on growing up. A little worldly wisdom would do wonders for you."

Wellearn bridled. "Captain, do you know Forbish?"

"Ah . . . I've never studied it, no."

"I have! And the documents I've been shown while you were lying sick have satisfied me that Jing was real!"

Worse and worse . . . Skilluck forced himself to an upright position. He said as emphatically as he could, "Since you oblige me to prove that our people are not all crazy, tell our hosts that I shall at once reclaim control of Tempestamer!"

"But you're not fit!"

"Let me be the judge of that!" Skilluck was struggling to bring his pads under control. "I must—"

But his pressure failed him. He was compelled to slump back to a sitting position, whence he glared at Wellearn as though it were the boy's fault he was so weak.

There was a rapid exchange in Forbish, and Wellearn stated authoritatively, "Shash is the curer-in-chief here. He says you must drink more creshban for at least another day before you leave this healing-house."

With a trace of mischief in his tone, he added, "I didn't tell him that was how long you already estimated would be necessary."

At home, mocking his briq-captain in that way would have led to punishment—perhaps lasting punishment, such as having one of his tubules punctured where it would never heal. Since arrival here, though, Wellearn had regretted his oath of fealty, and decided that if all else failed, he could put himself under the protection of the Hearthomers. What did he have to look forward to if he went back to Ushere? More and more hunger, more and more misery! He had never seen cresh on land, as he had told Skilluck,

but he had seen old folk lose their minds, reduced to such a state that they scarcely reacted except when they were fed like hoverchicks or barqlings, or when some young'un was brought to them to be mated because a wise'un claimed there was still virtue in that line despite appearances. It had been happening to Wellearn since it became obvious that he was among the lucky bright few, and there were no memories so revolting in his short life as those which reminded him of the foul mindless gropings he had undergone with starvation-crazed ancients. Not one—praise the stars!—of his encounters had so far led to offspring, but if he went home he would certainly be compelled to do the same again, and once the smell and touch took over. . . .

He shuddered. And wondered much about the nature of the stars which could dictate so cruel a doom for a person as well-intentioned as himself, then pay him back—for it seemed to him to be a reward—with the gentle sweetness of Embery. She had received him twice already, and her father thoroughly approved, for as he said, "We too in this delicious land are plagued by forces we don't understand, and it has been nearly a score of years since one of our family bred true: myself with the lady who gave me Embery and died."

What, on the other claw, they did understand had not yet ceased to astonish him.

Leaving Skilluck's bower, he was overcome by memory. . . . Behind the inland hills, a valley lined with smoke-blackened rock; heaps of charcoal, even blacker, surrounding cone-shaped furnaces; piles of sand and unknown minerals, green and brown and white and red; sober folk all of whose names ended in -fire, claiming spiritual if not physical descent from Jing's legendary friend who lived underground yet brought the light of heaven forth from a cave . . . Wellearn knew all the stories, for he had been told them as a child, but later he had been taught to think them fabulous, whereas the Hearthomers took them literally, and by their guidance produced incredible ingots of metal and unbelievable quantities of pure glass. Beyond, a desolation as complete as though a hurricane had laid the vegetation low for a day's walk or more, was being systematically replanted with oilsap trees that grew quickly and burned hotter than even the best charcoal.

. . . In a fine house overlooking the sea, an elderly couple possessed of tiny miracles in the shape of roundels of glass no larger than a raindrop, but perfectly shaped, through which they showed him the secret structure of plant-stems, fungi, his own skin im-

mensely magnified, as though a telescope were to look down to the small instead of upward to the large.

... In a grove just outside the city, folk who selectively bred meatimals, burrowers, diggets, mounqs, draftimals, and a score of creatures he could put no name to, seeking to make them fatter or more docile or in some other way more useful. Their clean-lickers were said to be unique, capable of cleansing any wound of its poison within days and making a swift recovery. To take a few of those home to the lands where so often a daring fish-hunter died for his temerity in defying a rasper or a vorax: that would be an achievement! But what to trade for breeding-stock? Did Embery know about northfinders? It seemed not; alas, though, Tempestamer carried only one, which wasn't in brood-phase this year. Besides, they seldom bred true, a problem that plagued the Hearthomer animal-breeders too.

... On the highest of the nearby hills, the one Embery had pointed to from the crown of the healing-house, her uncle Chard—much older and fatter than his brother—complaining about the difficulty nowadays of studying the stars because the sky was cloudy so much more often than in his youth, and boasting about the knowledge of ice which he had acquired only a few days' journey from Hearthome. There was, apparently, a range of mountains whose peaks were snowcapped even in these latitudes, a fact which dismayed Wellearn, for if the mountains were closer to the sun, how could they be so much colder than the land below? Surrounded by telescopes which made Skilluck's look like a toy, Chard launched into a lengthy lecture concerning reflectivity and absorption, conduction and convection, aurorae and shooting stars and a score of other concepts which Wellearn failed to grasp but which filled him with tantalizing excitement: so much knowledge, so much to be found out!

... In a giant tree at the heart of the city, hollowed out deliberately and ornamented with the finest and handsomest secondary plants, a glass container sealed with wax, through which could be glimpsed the original of Jing's scripture. It was uncapped only once in a score of years, so that a fresh copy might be made, but even so it was starting to rot, and next time they planned to make two copies, of which one would be incised on rock instead of perishable wood. In any case, though, by this time the Heart-homers had added many new discoveries to those of Jing and Twig. Everything he was told fascinated Wellearn, and above all he was seized by the tales of the New Star which Chard and Shash and Embery recounted. And, over and over, he pondered the cen-

tral teaching of Jing's followers: that the stars were fire, and one day the planets would go to feed them, as charcoal was added to a furnace, to make them blaze up anew.

"We do not believe," Embery told him soberly, "that we are here solely to endure until the world falls into a dying sun. We believe it is our duty to escape that fate. Out there are countless worlds; until the end of time, some will remain for us to live on."

"But how can one travel there?" was Wellearn's natural riposte.

"We don't know yet. We mean to find that out."

Everywhere he went Wellearn had a sense of being watched and weighed and scrutinized. Until the captain regained his health, he was the Wego's sole ambassador; he did his best to behave accordingly.

And the day after Skilluck took Tempestamer to sea and brought her back content with what she had engulfed in open water, Wellearn found out that his conduct had impressed the citizens. For Shash came to tell the strangers they were invited to a gathering of the general council, to discuss a mutually advantageous proposition.

"What they mean," was Skilluck's cynical comment, "is that they've figured out a way to rob us blind. Well, we have to go along with the deal; we have no choice."

Wellearn bit back his urge to contradict. Time would tell.

IV

"It grieves us all to learn of the death of our visitor Blestar," Chard said to the assembled council. The foreigners dipped in acknowledgment, although Strongrip and Sharprong were reluctant and only a glare from Skilluck compelled them. Wellearn was still recovering from the shock of having to conduct his first-ever funeral, and in a far-off land at that. But the ceremony had been decent and respectful, even though the Wego tradition of committal to the ocean was unknown here, and Blestar's corpse was fertilising a stand of white shrubs.

Now it was his duty to interpret some of the most complex statements he had ever heard in any speech. Shard and Shash had given him a rough idea in advance, but even so . . .

Still—he brightened—none of the others spoke Forbish, let alone this modern descendant of it, although he had the distinct impression that Skilluck often understood more than he let on.



At all events, he had the chance to trim the list of the debate. He was determined to do so. He wanted his people and the Hearthomers to be friends; he wanted, in particular, to spend the rest of his own life here.

Not that he would dare risk admitting it. What he hoped was to be appointed resident agent for the Wego, and oversee a regular trade between north and south. So many benefits would flow from that . . .

But he must concentrate, not rhapsodize. The discussion was likely to be a long one. The Hearthomers took refuge from the hottest part of the day, but the assembly had gathered in late afternoon, and might well continue throughout the succeeding night. He composed his mind and relayed Chard's next remarks.

"We have been told that winters grow colder and longer in your land. Since according to our observations the sun is growing brighter and hotter, we are faced with a paradox."

("What in the world is he on about?" grunted Sharprong. "It doesn't make sense!")

But Wellearn was gripped by Chard's statement and anxiously awaiting what was to follow.

"We know this because we have carefully calibrated the way in which certain substances change after exposure to concentrated sunlight under identical conditions, that's to say, on a completely clear day. Cloudless days, of course, are growing fewer"—and several present glanced anxiously at the sky where yet more thunderheads were brewing—"but we keep up our experiments and we can be nineteen-twentieths sure of our conclusions."

("Is he ever going to come to a point?" was Strongrip's acid reaction.)

"We can only deduce that more solar heat causes more clouds to reflect it and more moisture to fall at the poles as snow, which in turn reflects still more light and heat. At my laboratory the possibility can be demonstrated using a burning-glass and a block of white rock half-covered with soot."

Wellearn had seen that demonstration; he had not wholly understood what he was meant to learn from it, but suddenly a blinding insight dawned on his mind.

("Come on, boy!" Skilluck rasped. "You're falling behind!")

"At a time when mountains here in the equatorial zone can remain snowcapped throughout the year, this is clearly a worrisome situation. Those among us who have never experienced ice and snow may doubt what I say, but I have felt how cold can

numb the pads, seen how it affects the plants we here take for granted!"

"Why does he have to go on so?" growled Strongrip, but Skilluck silenced him with a glare.)

"We must therefore anticipate a time when mariners from the far north will arrive, not driven hither by a fortunate storm, but because their home has become uninhabitable. Yet this need not be an unmitigated disaster. For if there is one thing we lack, then . . . But I'll leave the rest to Burney."

"I've been told about him!" Wellearn whispered in high excitement. "He's the one-who-answers-questions, their most distinguished administrator! But I never saw him before!")

Thickset, yet as tall as his compatriots, Burney expanded to full height as Chard lowered. He uttered a few platitudes about the visitors before picking up Chard's trail.

"I know his sort," Skilluck said contemptuously. "The politer they are, the more you need to brace yourself!"

"What we lack, and in lacking neglect our duty, is access to the oceans!" Burney stated at the top of his resonant voice. "Oh, we've done well by our founders in spreading their teaching across this continent: travel for months overland and you won't find a child of talking age who doesn't grasp at least the rudiments of what Jing bequeathed! But we know there's more to the globe than merely land, don't we? Proof of the fact is that our visitors came to us from a country which can't be reached from here drypadded!"

"You told them that?" Skilluck snapped at Wellearn. "Oh, you threw away a keen prong there!"

"I did nothing of the sort!" Wellearn retorted, stung. "Listen and you'll find out!"

"Suppose, though, we were to combine the knowledge we've garnered with the skills of these strangers," Burney went on. "Suppose the brave seafarers of the Wego could voyage free from fear of cresh; suppose on every trip they carried the knowledge which Jing instructed us to share with everybody everywhere, so that every one of their briqs was equipped not just with a north-finder—I'm sure you've been told of their brilliant development of that creature which can always be relied on to point the same way? Though it does seem," he added with a touch of condescension, "they don't realize that if they really had crossed the equator, as Wellearn appears to imagine, it would reverse itself."

(Amid a ripple of knowing amusement Skilluck fumed, "It doesn't surprise me! After the flattery, the put-down!")

Burney quieted the crowd. "Perhaps that remark was unwor-

thy," he resumed. "At all events, we know these are an adventurous people, who take the utmost care to ensure that when they set out on no matter how risky a voyage they can find their way home by one means or another. Suppose, as I was about to say, they carried not only telescopes useful for sighting a promising landfall, but better ones suitable for studying the sky, and the means to prove to anyone they contacted how right Jing was in what he wrote!"

(Applause . . . but Wellearn had to cede a point to Skilluck when he mused, "So they want to overload our briqs with chaplains worse than Blestar?")

"We therefore offer an exchange!" Burney roared. "I hope Captain Skilluck will accept it! We will share with his folk everything we know—yes, everything!—if the Wego will put their fleet at our disposal every summer for a score of years, to return laden with southern foods and southern seeds and southern tools, after carrying our message to lands as yet-unknown! Now this is a grand scheme"—his voice dropped—"and there are countless details to thrash out. But we must first know whether the principle is acceptable."

(Skilluck looked worried. Wellearn whispered, "They do things differently here!")

("That's obvious! *He* never tried to preside at a captains' meeting!")

"I see there are doubts," Burney said after a pause. "Let me add one thing, therefore. Assuming they accept our offer, then—if the winters at Ushere do become intolerable, as we may apparently fear according to what Chard has said—their people can remove hither and settle in and around the bay where their briq first made landfall. We would welcome them. Are we agreed?"

A roar of enthusiasm went up, and among those who shouted loudest Wellearn was proud to notice Embery. But Skilluck gave a brusque order.

"Tell him we need time to discuss this idea. Say we will be ready no sooner than tomorrow night!"

Perforce, Wellearn translated, and the assembly dispersed with many sighs.

"It's a trap," said Strongrip for the latest of a score of times. "There must be some snag in it we don't see!"

"I've been everywhere in the city and met many of the most prominent of these people!" Wellearn declared. "They take Jing's

teaching seriously—they really do want to spread his knowledge around the globe!"

"That's what frightens me most," grunted Skilluck. "Blestar was bad enough; embriqing with a stranger who has absolute rule over what course I choose is out of the question!"

"That isn't what they have in mind!" Wellearn argued. "These people never travel the oceans—they want to hook on to someone who does, and that could be us!"

"*Children!*" Strongrip said, and turned away in disgust.

That was too much for Wellearn. Rising to his maximum height—which, since arriving here, imbibing vast quantities of creshban, and eating the best diet he had ever enjoyed, had noticeably increased—he blasted, "I invoke the judgment of my ancestors in the stars!"

And bared his mandibles, which normally he kept shrouded out of ordinary politeness.

Skilluck said hastily, "Now just a moment, boy—"

"Boy?" Wellearn cut in. "*Boy?* I haven't forgotten my oath of fealty to my captain, but if you can't recognize a man who's just become a man I'll consider it void!"

Following which he opened his claws to full extent, and waited, recklessly exuding combat-stink.

At long last Skilluck said heavily, "It was time, I guess. You're not a young'un any more. But do you still want to challenge Strongrip?"

"I'd rather we were comrades. But I must. Unless he accepts me for what I am, with all my power of judgment. I did," Wellearn added, "invoke the honor of my ancestors."

There were still creshmarks on Strongrip's mantle, but Wellearn's was clear. Skilluck studied each of them in turn and said finally, "I forbid the challenge. Your ancestors, *young man*, are honoured sufficiently by your willingness to utter it. Strongrip, deny what you last said."

He clenched his body into battle posture, mandibles exposed, and concluded, "Or it must be me, not Wellearn, you take on!"

The stench of aggression which had filled the air since Wellearn rose to overtop his opponent provoked reflexes beyond most people's control. Only someone as sober and weather-wise as Skilluck could master his response to it.

Strongrip said gruffly, "He speaks this foreign noise. I admit he knows things I can't."

"Well said, but is he adult, worthy to be our comrade?"

The answer was grumpy and belated, but it came: "I guess so!"

"Then lock claws!"

And evening breeze carried the combat-stink away.

"Captain!" Wellearn whispered as the general council of the Hearthomers reassembled.

"Yes?"

"Did you know I was going to be driven to challenge—?"

"Silence, or I'll call you 'boy' again!" But Skilluck was curling with amusement even as he uttered the harsh words. "You haven't finished growing up, you know!"

"I'm doing my best!"

"I noticed. That's why I didn't let Strongrip shred your mantle. He could have done, creshmarks or no! So you just bear in mind your talent is for reasoning, not fighting. Leave that sort of thing to us seafarers, because at pith you're a landlubber, aren't you?"

"I—I suppose I am," Wellearn confessed.

"Very well, then. We understand each other. Now translate this. It's exactly what Burney most wants to hear. Begin: 'We can't of course speak for all the briq-captains of the Wego, but we will promote with maximum goodwill the advantages of the agreement you suggest, *provided* that at the end of summer we may take home with us tokens of what benefits may accrue therefrom, such as creshban, better cleanlickers, useful food-seeds, spy-glasses and so on. Next spring we'll return with our captains' joint verdict. In the event that it's favorable'—don't look so smug or I'll pray the stars to curse you for being smarter than I thought but not half as smart as you think you are!—'we shall appoint Wellearn to reside here as our agent and spokesman. Thank you!'"

V

At every summer's end the Wego captains came together for a bragmeet where the wise'uns too old to put to sea might judge whose briq had ventured furthest, who fetched the finest load of fish ashore, who brought the rarest, newest goods traded with chance-met strangers. It was the high point not only of their year, but of the chaplains' also. For generations the latter's influence had been shrinking, particularly since too many stars fell from the sky for most people to look forward to inhabiting one after death. But when it came to matters of ancient tradition, naturally they were called on to preside.

This meet, though, was different. Now there was no boasting, only mourning. On land things had been bad enough, what with crop-failure, floods, and landslips, but at sea they were infinitely worse. Braverrant had not returned albeit her master was Boldare, wily in weather-ways. No more had Governature with Galantrue and Drymantle, nor—next most envied after Tempestamer—Stormock whose commander had been Cleverule, sole among them to make two-score voyages.

Nor Wavictor, nor Knowater, nor Billowise . . . and even Tempestamer herself had not reported back.

Yet weather-sense warned them: the summer was done. The customary congress must convene.

Frost on every tree, snow on the beach above the tide-line, even ice-floes—but it was too soon! As Tempestamer closed the last day's gap between her and the waters where she had been broken, uncertainly as though aware something was amiss, Wellearn gazed in horror at the shoreline through drifting mist.

"Captain!" he cried. "Have you ever seen so much ice at this season, or so much fog?"

"Never," answered Skilluck sternly. "Maybe what your friends at Hearthome spoke of is coming true."

"I thought—*our* friends. . . ?"

"Those who have knowledge sometimes batten on it to gain power," Skilluck said.

"They spoke of partnership, not mastery!"

"What difference, when we are weak and they are strong? Count me the briqs you see at Ushere wharf and argue then!"

Indeed, the fleet numbered half its usual total, and the houses were white with rime and some were tilted owing to landslips, and the sky was dense and grey and the wind bit chill into the inmost tubules of those who lately had enjoyed the warmth of Hearthome.

"What's more, there's nobody to welcome us!" Skilluck blasted, having surveyed the city with his spyglass. "They must have called the bragmeet, giving us up for lost!"

Seizing his goad, he forced Tempestamer to give of her utmost on the final stretch towards her mooring.

Shivering in the branchways, more of the Wego attended the bragmeet than ever in history, and while the wise'uns tried to present the summer's achievements in a flattering light, kept

interrupting to ask, "What use is that to us? Can we eat it? Does it help to keep us warm?"

In vain the senior chaplain, by name Welkinower, strove to maintain formality. The folk mocked the claims of those who had survived the unprecedented summer storms by staying close to home, like Senshower whose Riskall had belied her name by scurrying from inlet to sheltered inlet, or like Conqueright who had pledged the reputation of his Catchordes on the chance of garnering vast quantities of fish only to find the schools weren't running where they had. Almost as though they were hungry for news of doom the assembly listened in silence to Toughide and Shrewdesign, who told of icebergs sighted all season long further south than ever known before, fish-hunters driven into mid-ocean clinging to barqs unfit for any but fresh-water work, great trees torn loose by gales and set to drifting with the current, some bearing signs of habitation as though they had formed part of a house, a town, or even a city. And when eventually they did make landfall, they reported, they found long tracts of coast abandoned to the dirq and fosq, the icefaw and the snowbelong, whose normal range was half-a-score days' journey poleward.

"What we brought home from our voyage," Toughide concluded soberly, "was no better than what we'd have got had we made due north."

The company shifted uneasily, but the chaplains preened. Now the meeting had settled down, they could remind themselves how hunger and anxiety invariably drove folk back to the faith and customs of their ancestors.

But suddenly a roar cut through the sougling of icy wind among the boughs.

"Who *dared* to summon a bragmeet without Skilluck? What misbudded moron told you Tempestamer would not ride out the worst of storms? Let him stand forth who called the meet before I came!"

And the furious captain stomped into the centre of the gathering, healthy-tall—taller than any Wego mariner in living memory—followed by Strongrip and Sharprong and someone whom the company had difficulty in recognising: Wellearn. But a Wellearn transformed, bigger, huskier, and infinitely more self-confident than the callow youth who had set forth in spring.

Welkinower shrank reflexively at Skilluck's intrusion, all the more because he and his companions were so obviously in good fettle. The captain fixed him with a glare.

"You!" he said accusingly. "You took it on yourself to say I must be given up for lost!"

"Not I!" the chaplain babbled, casting around for a way of escape, for combat-stink from Skilluck filled the air and he was weakened by fasting.

"Liar!" hurled Toughide. "You insisted on the meet being held when we captains said to wait a while! You understand the calendar—you know the normal end of summer!"

"But summer this year ended early! Surely a skilled seafarer—"

"We've been in latitudes where there is no winter!" Wellearn shouted.

"That's right!" Skilluck set himself back on his pads, claws poised. "Nor any hunger, either! Look at us! Think we're sick—weak—crazy—dreamlost? See any creshmarks on us? But I see one on you!" Reaching out quicker than Welkinower could dodge, he nipped the chaplain's mantle and provoked a squeal of pain.

"Thought so," the captain said with satisfaction. "Always the way, isn't it? When things get hard, instead of reasoning and working, you prefer to retreat into dreamness! Strongrip, make him drink a dose of creshban and see sense!"

"Best thing any briq from Ushere ever carried home," the seaman grunted, holding aloft a Hearthomer nutshell. "A certain remedy for cresh!"

That provoked a stir of excitement among the crowd.

"But," Strongrip continued, "do you think we should waste it on this idiot? After all, he's been starving himself like Blestar—deliberately—and Blestar was the only one of us it didn't save!"

"That's a point," said Skilluck ruminatively. "Very well, let them be the ones to go without. It'd be a fit punishment for the way they've insulted us."

"You have a cure for cresh?" Welkinower whispered, voicing what all present wanted to hear.

"Not we, but allies that we've made in the far south. They've offered us as much as we need—they have plenty!—in return for letting some of their wise'uns travel on our briqs to spread their knowledge. And don't think creshban is the only trick they have under their mantles! *Oh* no! We've brought back marvels which . . . But move over, you! Senior chaplain or not, you're a dreamsick fool and it's your own fault and Wellearn is worth a score like you! *Move*, before I rip your mantle into tatters!"

For an instant it seemed that Welkinower would defy the cap-

tain out of pride; then he humbly crumpled to half normal height and padded aside. Wellearn found himself at a loss. Was he really meant to take over and preside at a bragmeet, youth that he was?

"Well, go on!" Skilluck rasped. "Or I'll start thinking you're as silly as Welkinower! Speak out!"

"What shall I tell them?"

"Everything! Everything! I never imagined things would come to so grievous a pass this year. Next year maybe, or the year after . . . but it's upon us, and the land is in the claw of ice, and if another summer comes it could be our last chance to move to friendly country. The briqs which survive may already not be enough to shift us all! Hadn't you thought of that?"

Wellearn hadn't, but he pretended, and gave a grave nod of acquiescence as he took over the spot vacated by Welkinower. After so long among the Hearthomers he felt like a giant compared to his own people . . . as tall as Jing!

And that gave him his opening. Maintaining his maximum height, trying to imitate in Wegan the style and manner of Burney and others who addressed council meetings at Hearthome, he began.

"Teachers like Welkinower—and even my late mentor Blestar who has gone, let's hope, to make a star shine brighter!—told us to believe there never was a real person called Jing! They've encouraged us to be obedient and small-minded by saying there never was a man who understood the stars and made their nature manifest by transforming dull rock into marvellous new substances! With the evidence of spyglasses and metal blades to contradict it, we chose to accept this nonsense!

"But we have met followers of Jing who actually possess his scriptures, and I've read them all and copied some of them! Thanks to what Jing taught, the city of Hearthome is the richest on its continent! By studying Jing's principles the folk there have arrived at creshban and other medicines—they've bred mounqs that go on land as our briqs swim the sea" (*thank you, Embery!* he added silently) "—they live in houses which make ours look like hovels—they have such wealth that a bunch of sick seamen stranded there by accident might each repose in his own bower, recovering with the aid of a cure their own folk might not need in five-score years of which they yet keep stock for chance-come travellers . . ."

Gradually, as he talked, Wellearn let himself be taken over by imagination, sure that in his present state of vitality it would not shade into mere dreamness. He painted a picture of a glorious

future to grow from the joint seed of the Hearthomers and the Wego. Some of his listeners, he noted with dismay, had closed their ears the moment he spoke of Jing as a real person; others, however, less parched by cold and shrunken by privation, were clinging with their remaining strength to wisps of hope.

Concentrating on the latter, he concluded with a splendid peroration that sent echoes ringing among the rigid branches and ice-stiffened foliage.

Yet only a few of his audience clacked their claws, and after a pause Toughide said, "So you're asking us to pile aboard our remaining briqs and set forth now?"

"Of course not!" Skilluck roared. "But next year could see our last and only chance to move to a warm and welcoming land! If you won't hark to the boy—excuse me, Wellearn!—if you won't hark to the *young man*, then trust in me who came home after Welkinower told you I was dead!"

For a moment Wellearn thought his forcefulness had won the crowd over, but the idea of quitting the land where the Wego had lived since time immemorial was too great to be digested all at once, and the assembly dispersed without reaching a decision. Vastly disappointed, Wellearn slumped to four-fifths height while watching them depart.

"Excellently done," said Skilluck softly at his side.

"I thought I'd failed!" Wellearn countered. "At any rate I don't see them clustering around us to vote Tempestamer the wise'un's' prize for the past summer!"

"Oh—*prizes!*" Skilluck said contemptuously. "To be remembered in a score-of-score years: that's something else. Until I saw how few briqs had made it back to Ushere, all I could think of was how the Hearthomers might cheat us. Now I've felt in my tubules how right they are about the grip of ice. It's time for a heroic gesture, and since someone's got to make one, it might as well be us. If we can get enough of the folk to emigrate next spring, one day they'll talk of us as we do of Jing. I felt this as truth. I couldn't have expressed it. You did. That's why I say you made a great success of it."

"Captain," Wellearn muttered, "I never respected anything so much before as your present honesty. I'm glad to find I guessed right after all, but what you've just said—"

"Save it," Skilluck broke in. "And don't worry about persuading the rest of the folk around to our course. A few-score days of cold and hunger will take care of that."

"I wish I could share your optimism," Wellearn sighed. "Yet I

greatly fear that some of those who refused to listen did so not because they suspected us of lying, but because misery has already taken them past the reach of reason."

VI

"Uncle," Embery said musingly to Chard, "do you think Wel-learn will come back?"

Grousing at the annual need to adjust the mountings of his telescopes because the branches they rested on had swollen in the rainy season, her fat and fussy uncle finally pronounced himself satisfied with the work of his apprentices. Since it was once again too cloudy at the zenith for serious star-study, he ordered the instruments to be trained on the skyline.

"Hush, girl," he said absently. "In a little I can show you moon-rise like you never saw it before."

"But *do* you?" Embery persisted.

"With all the joint advantages that will flow from our alliance with his folk, why not?"

"Father says he doesn't think the captain trusted us."

"Just as long as that brig carried them home safely—and who's to say she couldn't if she lived out the awful storm which drove her here?—then you may rely on the powers of persuasion displayed by your young friend to bring more of their fleet here, and, if nothing else, the captain's greed . . . Ah, thank you!"—to the senior apprentice for advising him that the first telescope was properly set. "Now, my dear, come here. Before moon-rise, because this direction is fairly clear, I'd like to show you what they used to call the New Star. More than a score-of-score years ago—"

Embery stamped her pad. "Uncle, I'm not some ignorant youngling from the city school, you know!"

He blinked at her. "No need to be offensive, niece! Of course I know you've looked at it before, but I want to share a new discovery with you, and I don't believe you've understood half the implications of what I've tried to teach you."

"I have so!"

"Then tell me why I think the world can grow cooler even though the sun seems to be getting warmer—and I've worked out why!"

"For the same reason it's better in full sunlight to have a light mantle than a dark one! Reflection!"

But Embery's mood changed even before he could compliment her on a lesson well remembered, and she said, "You think you've worked out why? You never told me *that!* Go on!"

And she cuddled up alongside him much as she used to do when she was barely strong enough to stand upright, so that he had to lift her to the ocular of his telescopes.

Chuckling, Chard said, "That's more like my Baby Rainbow! I used to call you that, you know, until you took offence and said it was ridiculous to use the name of Jing's lady—"

"I still think so!" she interrupted. "Come to the sharp end of the prong!"

"Very well." Chard settled back comfortably. "My line of reasoning goes this way. We have seen, in the place of the so-called New Star, nothing but a cloud of bright gas for many generations. Yet every now and then we have recorded a sort of *wave* passing through it, and comparison of notes made recently with those made just after the first proper telescopes were constructed allows us to hypothesise that the sudden addition of a large amount of new fuel to the fire of a star causes an outburst of colossal proportions, as when one drops a boulder into shallow water. There are splashes!"

"You've told me this before!" Embery complained.

"Ah—but what about the matter that gets splashed?"

She thought about that for a little. Eventually she said, frowning with concentration, "It must spread out, over huge distances. And it must get thinner as it goes—"

"Correct! Even so . . . ?"

"Even so, when it reaches another star—Oh!" She started up-right. "You think a splash from the New Star has got this far?"

"It would explain a lot of things," Chard murmured, looking smugger than an astronomer of his age and distinction had any right to. "Above all, it would explain very well indeed why there are more and more stars falling from heaven—which of course aren't actually stars—at the same time as the sun is growing warmer."

"But this could be terrible!" Embery exclaimed. "Because the matter must have spread very thin on its way here, so if it's only the first bit that's got to us, then—"

"There may be more to come," Chard confirmed. "And we have no way of telling whether there will be so much that it screens out sunlight, or enough to heat up the sun so that ice will melt again, or as much as we've had already with nothing to follow. Whatever happens, though, the Wego are due for the most ap-

palling trouble. So could we be if the ice melted after forming, all at once. We'd need their help to rescue us if the level of the sea rose. Who knows how much water has already been frozen up? But we keep hearing from fish-hunters that they have to go further and further every year to cast their nets deep . . . Oh, every way it makes sense to ally ourselves with the Wego! Whether they agree is another matter. I mean, they may be as ignorant of the effects of a polar melting as most of our own folk are of the effects of freezing! When I climbed the Snowcap Range . . ."

Embery sighed. Her uncle was about to launch into one of his self-congratulatory reminiscences. There was no hope of hearing more, as yet, about his new theory, so it would be best to distract him.

"Isn't it time for me to look through the telescope?" she offered.

"Of course! Of course! And I want you particularly to take note of—"

He bustled about, issuing orders to the apprentices, but they were superfluous; all her life, Embery had been accustomed to sighting and using a telescope. She applied her eye.

And tensed. The tropical night had not yet fallen; the sun, behind a patch of western cloud, still turned the sky to blue. In a few moments it would vanish, but for the time being its rays slanted across the ocean.

"That's not the New Star rising, or the moon either!" she exclaimed.

"Patience, my dear!" said Chard indulgently. "Wait for night-fall. Then, just above the horizon—"

"Not above! *On!*"

"Are you sure?"

"Oh, don't be so silly! Look, *quickly!*"

Sliding aside, she almost dragged him into position behind the eyepiece.

After a long pause he said, "My dear, I owe you an apology."

Upside-down in his field of vision was something like a giant fang, neither white nor blue nor green but a shade between all three.

"I wish them well in the far north," he muttered. "That's all I can say."

"Why?" Embery was almost crying.

"I never saw one before, but I recognise it from the descriptions I've read and heard." Chard glanced at his niece. "I think you must have done the same."

"Yes, but I was so much hoping you would say I'm wrong!" Embury clenched her claws. "Is it—?"

"I'm very much afraid it must be. Further south than anybody has ever met one: that's an iceberg."

"You mocked me publicly before the folk," said Welkinower.

A sky full of racing black clouds leaned over Ushere; a bitter gale lashed the wharf, the harbour; snow turning to hail battered land and water like a forestful of spongidgs uttering their pellets of spawn in an evil season. Behind him ranged the muster of surviving chaplains: those who sacrificed bulk to tallness, who had been infuriated when Skilluck and his companions overtopped them. And all of them were exuding combat-stink of such loathesomeness that even the frigid blast of the wind did not suffice to protect those nearby.

What could protect anybody in the clutch of this terrible winter, when not even seaqs or dugonqs were to be trapped beneath the ice because there were no floes thin enough to stab through, when icefaws and snowbelongs rampaged into the middle of Ushere?

The chaplains said: the stars. But nobody had seen a star in four-score days . . .

Somewhat reduced from the great height they had attained at Hearthome, Skilluck and his comrades confronted them. The crew were at the wharf perforce, for Tempestamer had to be taken to sea once in a while to eat, there being no pickled weed or fish to spare from feeding folk. To the surprise and satisfaction of his captain, Wellearn too had volunteered to turn out, regarding himself now as a full member of the company.

More than one briq was unlikely to live until spring, being already too weak to face open water thanks to the neglect of her captain, but Tempestamer remained fat and energetic, and they meant to ensure she stayed that way.

"Who did the insulting?" Skilluck rumbled, rising to the bait. "Who declared that Tempestamer was too weak to swim through storms? Who said I was too bad a navigator to find a way home?"

"Who said we were crazy to trust to visions sent by the stars?" Welkinower countered. "Who brought a benefit for all the folk and now is keeping it himself?"

"We're doling out our creshban to those most in need!" roared Sharprong, clenching into fighting posture. "Those who have nothing to offer the folk may mock—like *you!*—and we shan't care!"

"Scores will! Scores-of-scores! You're traitors to the Wego!" Welkinower shrieked.

Standing a little apart, Wellearn suddenly realised what made the chaplains' stink so harsh: fanaticism. They were so far into the maw of dreamness, reason would not convince them. And already they had deranged Skilluck, normally so self-controlled . . .

"Captain!" he shouted. "They've taken the windward of us! Shift round—*shift round or they will make us mad!*"

Startled, Skilluck shook himself as though emerging on land after a swim. "You're right, by Jing!" he exclaimed. "Sharprong! Strongrip! *Quickly!* Follow Wellearn!"

And with short but menacing strides they marched into the face of the gale before turning and confronting the chaplains anew.

That put a very different colour on the mantle of the situation. The exudate of righteous anger was accessible to those not breathing their own wafts of madness. It made the chaplains think again.

"How fragile is our sanity!" Wellearn whispered, not meaning anyone to hear.

"Once more you're ahead of the rest of us," Skilluck muttered. "But most of them are well and truly dreamlost!"

"Dreamlost?" Wellearn cried, straining to make himself heard against the howling of the wind. "No! They're frightened! And I'll tell you why! It's because if we steer the only sensible course and remove to Hearthome, they'll meet people who can contradict their lies about Jing!"

Skilluck clutched at his mantle. "If you provoke them any more—"

"They outnumber us," Wellearn returned softly. "Surely our best hope is to make them quarrel among themselves?"

Skilluck's eye widened. "Neat!" he approved, and went on at the top of his voice.

"That's right! Now suppose instead of Welkinower, someone like *you*, Lovirtue, or *you*, Grandirection, had been in charge of the bragmeet: you'd not have insulted me, would you? You wouldn't be so afraid of meeting strangers, either, I'm sure!"

"Of course not!" they both exclaimed.

"Nonsense!" Welkinower roared, turning on them. It very probably was nonsense, but all their tempers were set to snap like saplings in the path of a giant.

Grandirection, whom Skilluck had picked on because he was

visibly near breaking-point, immediately raised his claws and bared his mandibles and began to pad around Welkinower seeking an opening for attack. In the meantime, several people had emerged from nearby houses and were gazing in wide-eyed astonishment at these chaplains making ready to disgrace their calling.

"Now's our chance," Skilluck whispered. "And—and thank you, Wellearn! Much more of this, and I'll come to think you *are* as smart as you imagine!"

A few moments later, the crew were able to pry Tempestamer's cold-stiff tentacles free of their mooring and goad her towards open water. Such was the violence of the gale, she was already tossing before she quit the harbour-mouth.

"What a disgusting spectacle that was!" shouted Wellearn against the blast.

"There's nothing wrong with them that a mawful of decent food wouldn't cure," Skilluck replied. "If only more of the Hearthomer seeds had taken . . .!"

"How could they," Wellearn sighed, "in a year when even the pumptrees are chill?"

The pumptrees stood in a grove at the centre of Ushere; it had been because of them that the Wego made their original decision to settle here, rather than the harbour, which was like half a score others nearby. Their taproots were known to reach an underwater spring, far below the level where a storm could stir the sea, which brought heat from deep-lying rocks. Carefully pierced and plugged, they furnished a year-round supply of warm fresh water. It was said that in the old days the chaplains denied that heat could come from any source except the sun, holding the stars to be cool because the spirits of the righteous dead departed thither after separating from the unrighteous in the moon—whose phases showed the division taking place—and that it had been the start of their decline when brave divers wearing capsutes under their mantles for a store of air reported that the sea-bed was warmer than the surface at this spot . . . a fact for which they had no explanation.

Accordingly the seeds and fungus-spawn from Hearthome, all of secondary and parasitic or symbiotic plants, had been carefully planted in crevices of pumptree bark, not because that was the species most resembling their usual hosts but because they were the only trees likely to remain sap-swollen.

However, the diet didn't suit the strangers; some died off completely, some seemed to be lying dormant, and of those which had

sprouted, none yielded the harvest that could be relied on at Hearthome.

Still, any extra nourishment was welcome . . .

Already, though, as the chaplains bore witness, voices were being raised against Skilluck and his crew, blaming them for what was not in their control: bringing the wrong sort of seeds, not insisting on being given more creshban, wasting space on spyglasses and articles of metal instead of food. It would be hard to keep their tempers in face of such taunting. Nonetheless it must be done. No other plan made sense than removal to Heart-home; no briq but Tempestamer could lead the fleet thither. There were no charts for her storm-distorted course.

So she must be fit and lively four-score days from now. Or they were doomed.

VII

For a while longer the fact that Skilluck and his comrades—surviving on what they had stored during their season of good eating but otherwise, save mentally, in little better shape than anyone else—struggled along the frost-rimed branchways to deliver doses of creshban, together with what scraps of fruit or leaf or funqus-pulp their exotic plantings on the pumptrees yielded, counted heavily in their favour, while the chaplains, who had disgraced themselves by their affray on the wharf, lost countenance.

Then the creshban started to run out, while the number of victims multiplied, and even some who had declared support for the idea of emigration took to accusing Skilluck of lavishing the medicine on himself at others' expense. By that stage it was useless to argue. People were taking leave of rationality and slumping into stupor from which a few at least would never revive.

The sole consolation was that, undernourished and sickly as they were, none of the Wego any longer had the energy for fighting. But that meant, of course, they would have none to prepare for a mass exodus when the weather broke, either.

"Why did we come home?" Wellearn mourned more than once. But Skilluck strictly reprimanded him.

"We had no way of knowing how bad this winter was to be! Nor would we have felt easy in our minds had we abandoned our folk to face it without help!"

"At least we needn't have found out until next summer," Sharp-prong grumbled.

"By which time our kindred and our children could have been dead! As things are, we stand some slender hope of keeping a clawful of the folk alive."

"Slender . . ." Stronggrip muttered, gazing at the drifts which blizzard after day-long blizzard had piled against the bravetrees. Many upper branches and almost all their fronds had frozen so hard the wind could snap them off, and every gust was greeted with their brittle tinkling.

"Next time we take Tempestamer to sea we'll hang a net while she feeds," Skilluck sighed. "Even a load of sour weed could help to save another briq or two."

"Captain, you can't keep our fleet in being single-clawed!" Stronggrip began. Skilluck silenced him with a glare.

"Name me another captain who's fit enough to try!"

There was a dismal pause. At length Wellearn ventured, "Maybe Toughide?"

"One might well try him, sure. Wait on him and ask if he will join us. If he won't, I'll still try and feed his briq, or anyone's!" Skilluck stamped his pad. "How many summers to catch and pith and train the briqs we need to replace Stormock, and Billowise, and the rest? For all we know, there may not *be* another summer!"

So it was done, and Toughide goaded his weak and weary Watercrown forth in Tempestamer's wake the next clear day, and though she was less elegantly pithed a lucky mawful of fish revived her and he was able to make it back to shore with a mass of weed caught on curved prongs, lacking nets such as Skilluck had preserved.

When it was noised abroad that those briqs too feeble to risk the winter ocean were nonetheless receiving fodder, a few score folk made their way to the wharf and watched the spectacle in silence. It was unprecedented. Never in history had any captain of the Wego acted to aid his rivals; rather, he should frustrate them so they would not win the wise'uns' prize.

It was a new strange thing. The onlookers dispersed and reported it. Next time the weather cleared not two but seven briqs put out: Riskall came, and Catchordes, and Shrewdesign's Neverest, and two more so young their captains had not named them, which seemed barely strong enough to quit the harbour.

Towards these last Tempestamer behaved most strangely, for she slowed her pace instead of exulting in the water, and kept them in her lee as though they were of her own budding. By now

Wellearn was informed concerning the manner of pithing and breaking a briq, and therefore he exclaimed in amazement.

"Captain, had I know when I first joined your crew that you'd left Tempestamer with *those* nerves intact . . . !"

He left the rest unsaid. There was no need to explain he meant the nerves governing a briq's response to briqlings. It was generally held to be a recipe for disaster to do as Skilluck had done, for such a briq might fall in with a wild herd and become ungovernable.

Dryly Skilluck made reply, "Most likely my Tempestamer would cut younglings out of the herd without orders and drive them home with her! It's something I've always wanted to try. Is she not huger, even now, than any wild'un?"

It was true. There was no record, not even any legend, of a briq surpassing her, and she was still growing despite the dreadful winter.

"We'll find a wild herd off the coast near Hearthome," said Skilluck dreamily. "We'll let her pick the young'uns she personally likes. We'll raise such a fleet as will conquer any ocean, any season. Before my time expires, I hope to see the Wego travel round the globe!"

"Captain!" said Strongrip with a sharp reproof. "We have to live until the summer first!"

"Agreed, agreed," the captain sighed, and raised his spyglass to search for weed among the random floes.

They returned with not only weed but plumpfish, for Tempestamer sensed a school of them and patiently circled until they had to approach the surface again where she and her companions could feed and nets haul up what was left. The other captains were loud in admiration, and Skilluck seized his chance to exact a pledge: were spring to be delayed, were the fields to lie under frost a month past usual, they would take aboard whomever of the Wego wished to come and head south, following Tempestamer.

Hearing the vow taken, Wellearn almost collapsed from relief.

"Captain, we're saved!" he whispered.

"Didn't I tell you? A few score days of hunger and cold, and then a mawful of good food . . . But we aren't on course yet. So many of us are too lost in dreamness to work out what's best for our salvation."

For at least a while, though, it seemed Wellearn's prediction was assured of fulfilment. Revived by the gift of fish, half the Wego came to watch the next departure of the fleet—and help

carve up the carcass of a brig that had died at her moorings, a tragedy for her captain but valuable food to the folk—and among them were Welkinower and Grandirection, who had composed their quarrel. They made shift to chant a star-blessing on the departing brigs, and the crowd settled into familiar responses even though a few children, too young to have seen a clear sky, were heard to ask fretfully what stars might be.

Two calm days followed, and the nets were quickly filled, suggesting that warm water was working up from the south in earnest of springtime and bringing bounty with it.

But on the fleet's last night before returning home a fiery prong stabbed out of heaven and exploded on a berg, raising a wall of water high enough to swamp the smallest brig. There was a thunderclap, followed by a cascade of ice-chips, but this was not hail and that had not been lightning.

Tempestamer gave forth a cry such as no tame brig had ever been heard to utter, and for hours ran out of control, seeking the lost young'un. Although Skilluck finally mastered her again, and set course for Ushere well before dawn, it was obvious that some captains were regretting their pledge. After all, if despite the chaplains' blessing the sky signalled its enmity, what hope was there of carrying out Skilluck's plan?

"That was an omen!" was his retort. "If we *don't* move south, that's what we can look forward to more of! Wellearn, do the skies hurl such missiles at Hearthome?"

"Not that I was ever told!" Wellearn asserted.

"But you said the stars look down on Hearthome more than us! Maybe we should stay here, cowering under cloud!"

Wellearn was taken aback until he saw what Skilluck was steering towards. Then he roared, "Safe? Did that prong strike from clear air? More likely the stars are warning us to move where we can see them and be seen, instead of hiding from them all the time!"

The force of his logic told to some extent, but what counted most was that their weather-sense had given no warning of that blow from heaven. Had it been a lightning-strike, it would have been preceded by a sense of uncomfortable tightness and uncertainty. As things were, the discomfort had succeeded the impact. The sensation was weirdly disturbing.

Shortly thereafter the chaplains, whose duties included keeping track of the calendar, marked the usual date of spring. Weather-sense contradicted that, too. Traces of a thaw did occur; many beaches were cleared of ice as warm water washed against them.

But uplands to the north which ordinarily caught the early sun-heat remained capped with snow, and even in low-lying valleys there were places where the drifts endured. As for the ground where new crops should be planted, it was stiff as stone a full month later.

"I hold you to your vow," Skilluck said when that day dawned, and the other captains shuffled their pads noisily. "But for me, would your briqs be even as healthy as they are?"

"Ask the storm-lost," someone muttered.

"They're not here—*we are!*" Skilluck snapped. "So are what's left of the Wego. Must they stay and starve because the bravetrees are frosted and nothing grows on them, because the fields are hard as rock and all seeds die at the sowing?"

"To risk cresh on a crazy course to nowhere?" another cried.

"To suffer cresh right here, when creshban is to be had at Heart-home and Tempestamer can guide us thither?" Wellearn countered.

Of all the various arguments advanced, that struck deepest in his listeners' tubules. Even those who had best planned to cope with the winter were showing creshmarks now, and saw little hope of escape before the sickness claimed their powers of reason.

"We'll follow you," said Toughide finally. "With all the family and friends our briqs can carry. And let those who choose the other way be cast upon the mercy of the stars."

"Then get to work!" Skilluck rose to what was left of his former height, and despite his shrunken mantle still overtopped the rest. "Tomorrow's dawn will see the Ushere fleet at sea, and our land-fall will be in a kind and gracious country where we shall be helped by allies—helped by *friends!*"

"Uncle!" Embery cried, rushing up the slope that led to Chard's observatory. "Uncle, great news!"

Worried, absent-minded, owing to old age and the problems of the past few months which had so much interfered with his study of the stars, the old man nonetheless had time to spare for his brother's daughter. He beamed on her indulgently.

"Good news is always welcome! What have you to tell me?"

"Strangers are coming over the northern hills! It must be Wellearn's people at last! Did you not calculate that their spring must have begun long ago?"

"Yes, at least a month past, maybe two!" Suddenly as enthused as she was, Chard ordered one of his telescopes trained on the

high ground to the north, and exercised an old man's privilege by taking first turn at its ocular.

And then he slumped. He said in a voice that struck winter-chill, "My dear, were you not expecting the Wego to arrive by sea?"

"Well, sure! But given how many of them there are, perhaps they had to ferry their folk to the nearest landfall and . . ."

She could hear as she spoke how hollow her words rang.

"This is no question of perhaps," her uncle said. "This is a fact. The fireworkers' district is being attacked. If that's the Wego's doing, neither you nor I want any truck with them!"

VIII

Heavier-laden than ever before, yet seeming utterly tireless, and with her back sprouting trencher-plants and vines as luxuriant as though this were an ordinary summer voyage, Tempestamer beat steadily southward on the trail which only a briq could follow through the currents of the ocean. Some said it was a question of smell; some, a matter of warmer or colder water; others yet, that briqs could memorise the pattern of the stars though they were invisible by day or cloud-covered at night. After all, maintained these last, a northfinder could be carried anywhere, even in darkness, and always turn the same unfailing way.

But most were content to accept a mystery and exploit it.

Certainly Tempestamer had learned from last year's storm. Now, if clouds gathered threateningly, she altered course and skirted them without Skilluck needing to use his goad, or when it was unavoidable hove to and showed her companions the way of it, even to locating masses of weed shaken loose by gales from coastal shallows. This gave much food for thought to both Skilluck and Wellearn, who served this trip in guise of chaplain because the passengers they had aboard would not have set forth without one. The former wondered, "Perhaps one shouldn't pith a briq at all. Perhaps there's a way of taming them intact. Could we be partners?"

While Wellearn mused, "The directions she chooses when she meets a storm: they imply something, as though the storm may have a pattern. At Hearthome I must study the globe that Chard offered to explain to me, because watching the sky . . ."

The other captains, though, grew afraid on learning how much of Tempestamer's weather-sense had been left intact. All of them



had had the frustrating experience of trying to drive a brig direct for home when bad weather lay across her path, but rations had run so low that only a desperate charge in a straight line would serve the purpose of survival.

So too had Skilluck, as he said, and he preferred to come home late with vines and trencher-plants intact. What then of last year?—countered the others, and he could give no answer, except to say the fortune of the stars must have been shining on him.

Knowing him for a skeptic, they dismissed that and went on worrying.

Still, the weather continued fair. Despite the fact that they had met icebergs further south than even Toughide and Shrewdesign last summer, there had been whole long cloud-free days and nights, and the children had exclaimed in wonder at the marvels thereby revealed, especially the great arc of heaven composed of such a multitude of stars it never dwindled regardless of how many fell away in long bright streaks. Those riding Tempestamer kept begging for a peek through Skilluck's spyglass, and Wellearn amused them with fantasies based on something Embery had said, about the time when folk would travel to not just another continent, but another world.

One, though, sharper than the rest, demanded seriously, "Where do we find the kind of brig that swims thither?"

"If we can't find one," Wellearn answered confidently, "then we'll have to breed one—won't we?"

"She's slowing," Skilluck murmured. "That means landfall, if I'm any judge." Keeping his spyglass trained on the horizon, he swung it slowly from side to side.

And checked.

"Wellearn, did the Hearthomers mention a people around here who consign their dead to the sea?"

Startled, Wellearn said, "That's a custom of seafaring folk like us! They said there were none on this whole coast! That's why when Blestar died we—"

"Oh, I remember," Skilluck interrupted. "But there are bodies floating towards us. Five of them."

It was in Wellearn's mind to ask whether he was mistaking some unfamiliar sea-creature, when his own eye spotted the first of them. No chance of error. Here came five light-mantled people of the Hearthome stock, and none was making the least attempt to swim . . .

"Stop Tempestamer eating them at all costs!" Skilluck roared to Strongrip. "It could be one of them is still alive!"

His guess was right. The last they hauled out of the water, while the passengers gazed in awe and terror, was still able to speak, though salt-perished and on the verge of death. Wellearn's mantle crumpled as he translated.

"We thought they were your people!" the stranger husked. "Even though they came to us by land! We thought maybe you were short of briqs to carry everyone . . ." He retched and choked up salt water.

"Go on!" Skilluck urged, aware how all the other captains were closing their briqs with his to find out what was wrong. Wellearn continued his translation.

"Beyond the mountains, land won't thaw this year! Except along the coasts, snow is still lying and the ground is hard as rock! That's what we found out from a prisoner we took. Never expecting an attack, we met the strangers with courtesy, but they were dreamlost and frantic and wrecked half of Hearthome before we managed to stop them. I never thought to see such slaughter, but they had started to eat us—yes, *eat us!*" A sound between a moan and a laugh. "And some of them were worse! They tried to eat *themselves!*"

"What of Hearthome now?" Wellearn cried, clenching his claws.

"I—we . . ."

The effort was too much. Salt-weakened, one of his lower tubules ruptured, and the man saved from the sea leaked out his life on Tempestamer's back.

After a long dread-pause Skilluck straightened. He said greyly, "We must go on. We can't go back. From what he said it's clear that if Ushere isn't doomed already it will be by next year. We've come south across a fifth of the world, and if even here we find that people have been driven off their lands by cold and hunger . . ."

There was no need to finish the statement. Those around him nodded grave assent.

"But if we can't settle here after all—" Wellearn began.

"Then we'll survive at sea!" Skilluck exploded. "The way the wild briqs do!"

"Not even Tempestamer can bear a load like this indefinitely!" Sharprong objected, indicating the puzzled and frightened passengers. "We've had an easy voyage compared with last year, but if there are going to be more storms—"

"Are there not uninhabited islands with springs of fresh water

we can put into when our drink-bladders won't suffice? Aren't there capes and coves to offer shelter? And don't we have more seafaring skill in this fleet than ever was assembled outside Ushere?"

Wellearn shivered despite the warmth of the day. Here was a vision more grandiose than his—indeed, than any save Embery's, which pictured travel through the sky.

But what about the rest? Would they agree?

Strongrip said heavily, "We must at least make landfall, captain. If our companions don't see with their own eyes what you and I might take on trust, there'll be recriminations."

"Those will follow anyway, the first time we run short of food," said Skilluck. "But you're right. We go ashore with all prongs sharp, if only for the chance to rescue wise'uns who know the secret of creshban. All else from Hearthome may go smash—who's going to light a fire in mid-ocean, let alone carry sand or stone to melt for glass and metal? Burn my Tempestamer's back? Never! Safer to use the stuff of life than the stuff of death! *But I want creshban!*"

Breathing heavily, he turned to Wellearn. "You stay here and keep the passengers soothed. The rest of us—"

"No," said Wellearn firmly. "I'm going ashore, too. If Embery still lives, I want her with me."

"Now you listen to me—" Skilluck began, but Wellearn cut in.

"Here come the other captains! We'd best present a united front."

"Stars curse it, of course! But you can't expect us to load up with every single survivor—"

"Then take her, if I find her, and I'll stay!" Wellearn flared.

"You're being unreasonable—"

"No, captain. Much more reasonable than you. I've thought this through. If we do take to a nomad life at sea, what are we to do about keeping up our numbers? Already people from Ushere and Hearthome are overbred. We shall have to copy what roving tribes do on land: leave part of our company at the places where we stop in exchange for strangers who want to learn the arts of the sea. It had been in my mind to propose such a policy anyhow, because of a talk I had with Shash. But if we do as you suggest . . ."

Skilluck clattered his mandibles glumly. He said after a pause, "Well, perhaps there will be some among the passengers who want to take their chances on land, even so far from home, rather than carry on at sea. Salt water isn't in the ichor of us all the way it is in yours and mine."

Well, learn wanted to preen. How short a time ago it seemed that Skilluck had called him a landlubber at pith!

Yet he still was, and it required all his self-control to accept that his hopes of settling at Hearthome had been shattered the way the prong from heaven shattered that berg. Maybe after seeing the city in ruins the idea would come real for him. Until then, he must compose himself. Here came Toughide and Shrewdesign to demand what was happening.

"You expect us, in our condition, to plod ashore and win back Hearthome from its invaders?" Toughide snapped.

So much they had foreseen. After the long voyage, few of the briqs were as fit and flourishing as Tempestamer.

"Not at all," was Skilluck's wheedling response. "We only expect the combined talents of the Wego to salvage something from the landlubbers, and above all what's going to be most valuable to ourselves: creshban, of course, but also . . ." He paused impressively. "Wouldn't you like spyglasses, all of you, better than this one of mine? The Hearthomers have them by the score! I never admitted it, but I craved one myself! Only they wouldn't part with the one I wanted until we'd concluded our alliance . . . Still, that's water past the prow. But the observatory where the glasses are kept is nearest the ocean and stands the best chance of having been defended! If we can only attain that hill before we're forced to retreat, and hold a bridgehead long enough to gather provisions, we shall retire with the finest treasure any Wegan could imagine!"

Rearing up to his full remaining height, though that strained his voice to shrillness, he brandished his beloved spyglass for all to see.

"If we don't come back with something better for us all, then you may cast lots for who's to have this!"

Uncertain at the prospect of a battle, for the Wego had never been collectively a fighting folk, Shrewdesign said, "We shan't try to re-take the city by force?"

"It would be dreamness to attempt it! But what's of use to us, that the invaders would simply smash because they're starved insane—we must take that!"

Unheeded while the debate was raging, the sun had slanted towards the horizon. Suddenly the tropic night closed down, and there were moans from passengers who had not yet adjusted to the speed of its arrival.

During their last day's travel the fleet had broached a latitude

further south than any on their course, and it was now for the first time they saw, at the western rim of the world just above the thin red clouds of evening, a great green curving light, edged like a shuddermaker's rasp.

Silence fell as they turned to gaze at it, bar the slop of water against the briqs' sides and the crying of frightened children. The redness faded; the green grew ever brighter.

"What is it?" Skilluck whispered to Wellearn.

"I heard of such things before, and never saw one," was the faint answer. "There are tales about the Blade of Heaven which comes to cut off the lives of the unrighteous—"

"Tales!" Skilluck broke in. "We can do better without those! How about some *facts*?"

"It's said at Hearthome that when a star flares up—"

"Oh, forget it! Leave it to me!" And Skilluck marched towards Tempestamer's prow, where he could be heard on all the nosed-together briqs.

"Chaplains! Stand forth! Tell me if that's not the Blade of Heaven!"

A ragged chorus told him, yes it was.

"Tell me further! Is it poised to cut off the lives of the unrighteous? And is it not unrighteous to leave those who offered to ally with us to suffer at the claws of hordes of crazy folk?"

The instant he heard any hint of an answer, he roared, "Well, there's our sign, then! Captains, prepare to moor your briqs! Against that cape there's a shelf of slanting rock where one may bring in even so large a briq as Tempestamer and not make her beach herself! And it's exactly below the observatory we're making for!"

IX

Among the many stories Wellearn had been told when he was a young'un, then taught to disbelieve as he grew up, was a description of what went on in the moon when the righteous and unrighteous were separating. Gradually dividing themselves according to whether they found dark or light more alluring, folk were said to yowl and yammer in imaginary speech; those following star-blessed visions pursued a straight path towards the light, those who doubted kept changing their minds, while only those who had arrived at righteousness by reason were able not to collide with others and be beaten or tripped up and so delayed on

their way to the glory of full moon. It was a child's impression of the adult world, perhaps, not stressing what the wicked must have done to deserve the dark.

Skilluck would have been deemed wicked by all the chaplains Wellearn had known, including Blestar, inasmuch as he often mocked and occasionally defied them.

But he was glad to be beside the captain when they went ashore, for what they found was like an actualisation of that terrifying childhood story.

No concerted attempt was made to drive off the Wegans who landed; there was neither rationality nor shared insanity to generate resistance. Wild-eyed, stinking, often with their mantles leaking, a horde of starvation-maddened victims ran hither and thither, some sufficiently aware to try and alarm their fellows, many more so distraught that they reacted only to the scent of oozing ichor and under the impression "here's food" began to clap their mandibles excitedly before attacking those who meant to warn them.

It might have been different had the newcomers been exuding combat-stink, but none of them was. They were serious, determined, and—most of all—afraid.

Wellearn was too calm to pretend otherwise. Wherever he glanced, he saw new horrors. One image in particular sank barbs in his memory. There was an elderly man who must have walked, he thought, as far as Tempestamer had swum to get here. For his pads were completely worn away, and he was hobbling along on the under-edge of his mantle with vast and painful effort, no taller than a new-budded child, leaving a broad wet trail like a giant slug. . .

For the first time Wellearn realised: there were some dooms far worse than death.

Beating back those who got in their way, using poles from their briqs' saddles in preference to prongs, Skilluck's party breasted the slope below the observatory and obtained their first view of the entire city. Wellearn repressed a cry. The trails of luminous vines which he had seen in Embery's company were being torn loose and waved madly around until they died, as though the bravetrees of all the houses had suddenly developed palsy. Northward, in the quarter of the fireworkers, there was a vast glare on the underside of a pall of smoke, suggesting that all the stored fuel had been set ablaze at once. And the night breeze carried not just fumes but the sound of screaming.

"Looks to me as if they're even crazier over yonder!" Skilluck muttered. "So who's going to want to quit the briqs and settle *here*? If we can't carry all the sane survivors . . . That's the spy-glass-house, is it?"

His answer came in the shape of a well-aimed throwing prong, which missed Strongrip by a claw's-breadth. At once they dropped to the ground, prepared to crawl the rest of the way.

"The defenders are still on guard," Wellearn whispered. "I must let them know who we are!"

"But—"

"I know what I'm doing!" And he began to work his way uphill, soilover-style, using his claws and the edges of his mantle instead of his pads.

Sharpening his hearing to its utmost, he caught faint shouts up ahead.

"Looks like a well-organised attack! Stand to!"

Another few moments, and a half-score of prongs flew over him. Somewhere behind was a strangled cry.

Moving as fast as he could, he closed the distance to the side of the observatory: that great complex of bravetrees and countless other plants where he had been shown marvels beyond belief. At every gap between their boles protruded a cruel spike instead of the former telescopes, and from roots to crown prongsmen waited to deliver death like a blow from the sky.

He gathered all his force and shouted, "*Embery!*"

And instantly doubled over, offering only the toughest part of his mantle to any missile.

It came—but he felt a mere blow, not a stab. The throwing prong skidded away into the undergrowth.

"Someone called my name!" he heard . . . or did he? Had tension allowed him to mistake imagination for reality? Straining perception to the utmost, he waited.

And almost rushed to dreamness with relief. No doubt of what he heard *this* time.

"No, daughter, it isn't possible. The stress has been too much for you—"

"*Embery! Shash! Chard!*"

Wellearn had to straighten out again to deliver his words with maximum force, and for an instant could imagine the prong that was going to lodge in his mantle. But he went on, "*The Wego are here! The Wego are here! Don't—!*"

One of the defenders high in the observatory's tree-crown heard

the warning too late. He had taken aim and let go. Wellearn screamed.

But the prong sank into soft ground . . . so close, he could feel the quivering impact. After a little, he was able to recover himself and return to normal pressure as Shash and Embery and half a score of their friends rushed to meet him.

Shamelessly embracing Embery under his mantle, as though they were about to mate in public—but she was showing his bud, *his* bud!—and anyway nobody would have cared if they had, Wellearn translated the conversation going on softly among the trees of the observatory, trying to make himself believe in his own heroism. That was what they were all calling it, Skilluck too . . . but it wasn't, it was just that he had done what the situation called for, and anyway most so-called heroes turned out to have been temporarily crazy, living a dream instead of reality.

He forced aside the relics of the chaplains' teachings about reliance on visions, and composed himself to concentrate on his duties as interpreter.

"We saw no signs of organisation on the way here," the captain was saying. "Does it break down at night, or is it always the same?"

"At the beginning there was some semblance of order among the invaders," Shash said. He was tired but coherent; his older brother Chard was slumped to the point where he looked as though he needed a sitting-pit, and paying scant attention. "They were able to confront us and—well, that was how we lost Burney. We were fit and rational, and thought they would be too. We now believe they must have been the first of their folk to work out what was happening, to decide that they must leave home and take over someone else's territory. And we assume that others fell in behind them when they realised this was their only hope, but by then they were—well—disturbed. And on the way I guess they infected others with their craziness."

"That fits," Skilluck muttered. "Any idea how far north they came from?"

"What few people we've been able to capture and feed up to the stage where they can talk normally—and there aren't many of those—all agree that the cold weather reaches down to the very pith of this continent. If my brother were better he could tell you more. But he's exhausted." Shash spread his claws helplessly. "The further from the sea, it seems, the worse the cold! We know that water retains heat longer than dry land, but even so, this

is terrifying! Are we due for frost and snow here in Hearthome? We've never seen such things! One could imagine the whole world turning into a frozen ball!"

"I don't think we have to fear that," Wellearn said, a little surprised at himself. He parted from Embery and leaned forward. "The way Chard explained it to me, warmth at the equator turns water into vapor, so clouds turn into ice at the poles. But if the sun goes on getting warmer—"

"Quite right!" said Chard unexpectedly, and lapsed back into distraction.

"Forget the theories!" Skilluck snapped. "We need to decide on a plan of action! I have one. We should simply—"

"But what about the Blade of Heaven?"—from Toughide.

"Oh, that!" Chard roused himself completely. "We know about such phenomena. When a star — like the famous New Star — explodes, it throws off gobbets which cool down in the interstellar void. If one approaches another sun, it warms up and boils off part of itself. All this follows from the teaching Jing bequeathed."

"Is this going to save our lives?" Skilluck shouted, erupting to full height. "Are you coming with us? Are you prepared to give us what you want to preserve from Hearthome? Make your minds up *now!*"

He was so patently correct, Wellearn found himself upright alongside him.

"Yes! And whatever else you give us, we must have the full text of Jing's scriptures!"

"Creshban!" Skilluck shouted, and the other captains echoed him. "If nothing else, we must have the secret of creshban!"

The wind had shifted; there was something menacing in the air that affected their weather-sense, making tempers raw, and it wasn't only smoke.

After a pause filled only by the noise of the crazy folk smashing and ripping through the city, Shash said heavily, "There's no secret to creshban. We don't know why, but fresh sour juices of new-budded fruits or even new-sprouted leaves will do the job so long as they have no animal matter at the roots. Nothing from a briq's back—nothing from a cemetery—only shoots that spring from new bare ground. I'll give you seeds that produce the most suitable plants, but . . . Well, essentially it's like eating a proper diet at home, instead of wandering across a desert or an ocean and living on stored food."

"That simple?" Skilluck whispered. "If we'd known—"

"If you'd known you'd never have come back," said Chard. Un-

expectedly, he forced himself upright. "You said that in Forbish, didn't you?"

There was a thunderstruck pause, while Wellearn registered the fact that he had not actually translated the last statement, and the rest of the Wego captains were looking blank.

"When you first came here, I thought you were better informed than you pretended," said the fat old astronomer. He squeezed himself higher, and even though the effort slurred his speech he overtopped Skilluck, for his was the taller folk. "Did you wonder on the way home last year why we didn't give you all of everything at once? Did you wonder whether we realized your intention was to cheat us if you could?"

Skilluck cowered back in a way Wellearn had never imagined he would see, not in his wildest fantasies. Chard blasted on.

"But it doesn't matter any more, does it? You kept your pledge to return; and *you* didn't know you were going to find us in these straits! You've met your honourable obligation, and it remains for us to match the bargain! Take what you can—everything you can, including people!—from this doomed city! Take telescopes and microscopes, take vines and blades and seeds and tools and medicines, and flee at once! Until dawn the attackers will be sluggish, but if you delay past then—! Leave us, the old ones! Leave everything except what your briqs can carry without sinking! And above all, take Jing's scriptures! Wellearn, *here!*" He bowed himself to a dark corner and pulled out a glass jar.

"Take the originals! We salvaged them first of all, of course, and there they are. Now they're yours. Use them as best you can. If you must, leave them where they will freeze. But *don't destroy them!* As for us, of course . . ."

"No! No!" Emberry cried, hastening to his side. "I won't leave you, I won't leave Father!"

"You'll have to leave me," Chard said gently. "But you'll go, won't you, Shash?"

"They've turned our healing-house into a jungle," the chief curer said. "They've rooted out our medicinal plants. If I stay, the stars alone know what use I could be to our folk."

"Go, then. Me, I'm much too old." Chard settled back comfortably where he had been. "Besides, I'm fat and I'd probably sink even a handsome briq like Tempestamer. Take your leave and let me be. And dream of me kindly, if you will."

Soberly, the visitors prepared to depart. As they were clasping claws with him, he added, "Oh, captain, one more thing, which might be useful to you in your navigation—that is, if you haven't

already noticed it. The end of the comet which you call the Blade of Heaven always points directly *away* from the sun. It might amuse you, Wellearn, when you have nothing better to occupy your mind, to devise a theory which will account for that."

"I'll try," Wellearn said doubtfully. "But without the means to conduct experiments—"

"There are always means to conduct experiments. And aren't you part of the greatest experiment of all?"

During the hours of darkness some of the briqs' passengers had indeed decided they would rather settle on shore and take their chances. As dawn broke they were heading south, together with several-score refugees from Hearthome, in search of a site that would be easier to defend.

Meantime Skilluck's party was working out what of their loads—hastily collected in the city—would be least useful, and ruthlessly discarding whatever they did not regard as indispensable. Before the day's heat had fully roused the crazy invaders, the booty had been distributed and so had the two-score Heart-homers who were prepared to risk the ocean.

Skilluck prodded Tempestamer with his goad, and she withdrew her mooring tentacles and made for open water.

"What did uncle mean when he called us an experiment?" Embery asked her father.

"We're mixing like different metals, to see what alloy will result," Shash answered, clinging anxiously to the briq's saddle as they felt the first waves. "It's the start of a new age, whatever the outcome."

"I liked the old one," Wellearn muttered. "And I've been cheated of my share in it."

"Don't think like that!" admonished the old man. "Even the stars can change! And what are we compared to them?"

"We don't yet know," said Embery. "But one day we shall go there and find out."

Overhearing as he issued orders to his crew, Skilluck gave a roar of sardonic laughter.

"Bring me the briq you went to swim to heaven on, and I will personally pith her! Me, with a northfinder I can trust and Tempestamer under me, I'll be content. Now let's go find a herd of wild briqs and start recruiting our new fleet. It's going to be the grandest ever seen!"

But despite the hotness of his words and the bright rays of the morning sun, the wind struck chill from the north. ●

LETTERS

Dear Dr. Asimov,

I have today received the July edition of your magazine and I was horrified to find that some of it has been printed in double columns. PLEASE go back to the old way of type setting—it is much easier to read, for one thing.

I thoroughly enjoy reading your magazine—first the editorial and then the letters. Then I go through the stories. The 'plonk' of it coming through the letter box makes my day—you published a letter from a blind person recently; well, this is one from a person disabled in another way. I have multiple sclerosis which handicaps me to varying degrees at different time. At the moment, for example, I can type but not use a pen to any extent—not that the typing is all that marvelous as my co-ordination is not all that good. But the main point is that I enjoy so much having your magazine and reading it from cover to cover each month.

I trust you are well and not working too hard. We need you in good health for many years to come.

Tonia Akhurst (Mrs)
London, England

Thank you for caring about me, but for some reason everyone seems to try to protect me from "overwork." No one seems to believe that I am happiest when working. In my turn,

I hope things don't go too badly with you. —And Shawna, how are we doing on the double-columns?

—Isaac Asimov

We've found that using double columns on the non-fiction sets it off nicely from the fiction, and in addition, allows the non-fiction to take up less space, leaving more room for fiction. At the moment, we plan to continue this practice.

—Shawna McCarthy

Dear Editor

I bought the first couple of issues of your magazine, but was not that terribly impressed at the time. I have recently returned to the magazine, however, and now I regularly find myself making the trip down to the local newsstand to pick up the latest edition. Needless to say, I now think the magazine is worth every penny. Either I've changed or you've changed or—more likely—we've both changed a little, but no matter which the change is for the better as far as I'm concerned. Keep up the good work.

Yours truly

Michael J. McCarthy
Woodstock, IL

Whatever the reason, whatever the change, we are glad you have

come to like us. Stay with us, for I feel we have already come to like you, too.

—Isaac Asimov

To the Good Doctor;

Okay, enough is enough. The July issue had some good, old fashioned, slug-it-out violence. That I can handle. However what I could not handle was Gregory Benford's "Lazarus Rising." After the first couple of pages I was ready to skip to the next story. Why? Oh, just little things like my skin was beginning to crawl; I was becoming slightly nauseous; my breathing was becoming more ragged; I was constantly checking to see if I could move my hands, turn my head. You see, Benford had touched upon my own personal fear: being confined. Don't tie me up! Don't even joke about putting me in a strait-jacket—I might go for the throat! Granted, I did figure out the ending midway through the story, but Benford's descriptions of poor Carlos Farenza were enough for me to rank this as one of the best stories I have ever read. I could feel myself fighting to move Farenza's arms and legs. A superior job of storytelling. Oh yes, the June issue was a bit on the racy side, wasn't it? Both the stories and the art work? Not knocking it; just offering a small comment. Thanks for many entertaining hours.

Jack Jay Jenkins
Hudson, NH

With me it's heights. Aristotle said the purpose of literature was catharsis. You get at your fears, for instance, and drag them into the

open. Who knows? It may make you less afraid.

—Isaac Asimov

Dear Dr. Asimov,

Hurrah! Your July editorial on rewriting was a breath of fresh air.

I learned to write in a news room. Since leaving journalism for the Navy I've felt guilty for not rewriting copiously. Sure, I usually would do two drafts of a short story, but I cancelled my subscription to *Writer's Digest* because I felt inadequate for not rewriting the story ten times.

Three years of turning out prose for picky editors/anchorpeople, against a deadline, is a pretty fair way to start learning the craft.

Thanks for letting me confess.

Humbly,

W.P. Holland
Corpus Christi, TX

I always suspected my editorials had a therapeutic value.

—Isaac Asimov

Dear Doctor Isaac and Company:

Congratulations on yet another fine issue of *IASfm* (August, 1982), and to Shawna McCarthy on her promotion. I found only one disappointment in the entire issue. I am sorry that James Killus's math for "High Iron" was not published. Checking it with my Hewlett-Packard would have been as much fun as a Martin Gardner puzzle. As for the good doctor's contest, I don't know what to say. Do you know the immensity of the task you've given us, even with the pre-1960s rule? I can't even move around with all

these stacks of *Amazings*, *As-toundings*, Ace doubles, and God knows what else strewn about. And the round-the-clock teams of science fiction researchers and lore-masters are eating me out of house and home. I've even thought of putting Evelyn Wood on retainer. There has to be a better way to earn five bucks. In closing, I am sad to say that KTLA, an independent TV station in Los Angeles, is taking *Star Trek* off the air. Maybe Gene Autry (yes THE Gene Autry), KTLA's owner, is saving the time slot for his movies, in the hope that Westerns will make a comeback.

Sincerely,

David Stuart
Redondo Beach, CA

But reading through those old stacks will be fun, I promise you. And Shawna has had another promotion, as you will have noticed.

—Isaac Asimov

Dear Editor,

Please don't listen to people like Mr. Morgenstern, who asked you to consider his letter a vote "for hard-science" stories. Science fiction is the literature of variety and change, and people who want to isolate it into *only* one form or another are the people who will eventually stifle its potential. One cannot vote "for" something without having voted "against" something; in this case it was against "experimental" SF. Instead of having just one or just the other, why not have both? Consider my letter a vote for variety. I find it interesting that Mr. Harrison dumps on new writers for not coming up with

original concepts in the same magazine in which he admits to writing the same novel (with different names) several times over.

Longevity and prosperity,

Joey Manley
Russellville, AL

Coming up with an "original concept" isn't easy and not even the best writer can do it every time, or even most of the time. And don't worry, we aim for variety—but not in every respect. We want only good stories. We don't aim to vary that by deliberate inclusion of rotten ones.

—Isaac Asimov

Dear Dr. Asimov:

Ah, there was a time, in my ignorance, I could enjoy science fiction without cringing. Unfortunately, it is no longer possible. In my liberation from the contemporary, I suffer with each "up," "down," "sunset," and "sunrise."

Science fiction authors have mentioned there is no "up" or "down" in space, yet continue to use them. Astronauts, as well as NASA films, mentioned the same, yet we continually read, speak, and write them.

Space is a new environment. Inhabitants of space will produce their own reference system and language. I believe that current and future science fiction writers should develop this further within their stories. "Up" and "down" can easily be eliminated or substituted without drastic rethinking and remain understandable. There are millions of examples but there's no need to put them all here.

Oh, of course, you want to know why "sunset." We are on "space-ship Earth" continually moving through the universe. The sun really doesn't set, we know this, but we continue to refer to "sunset." Our horizon is moving into the sun or away from it. When the astronauts orbit the Earth, their horizon (window) or the Earth (from their window) moves into and out of sun, moon, or stars. Therefore, sunsight or sunclipse, moonsight or moonclipse, etc. . . .

Enough for now. I don't expect the editors to screen and edit out every manuscript. Having this letter printed would, hopefully, get writers to make these changes. Let me enjoy reading science fiction again. I would also like to recommend reading R. Buckminster Fuller's books such as *Operational Manual for Spaceship Earth*, *Synergetics II*, and *Critical Path*. Why? Mr. Fuller educated me.

As ever,

Chester Twarog
Aurora, CO

In space there is no "up" and "down" in the sense that there is no immediate and universal experience of gravitational force. However, you can define up and down as you please. You can say "When I say 'up', or 'down', I mean the direction of my head or feet, respectively," and who can say you nay?

—Isaac Asimov

Gentlepeople:

I have recently read the latest four issues of your magazine and believe it high time for you to receive some feed-back.

First I want to say I enjoy Dr. Asimov's editorials, whether or not I agree with him. I also like your letters and books sections, but I do not appreciate your new profile department and wish to add my vote to them who want to keep the 'f' in *IAsfm* meaning fiction, not fact.

You have also rearranged the fact sections into two columns per page. Why? Suppressing a feeling of reading newspapers, I first read the contents, trying my best to be unbiased. I kept losing my place because of the smaller length lines. There is also more unused space at the top of the pages in the new style.

You have changed the cover format somewhat, too. (Thought I wouldn't notice!) I think the frame gave the magazine a cleaner look. But I still like the present cover over the old one.

Now we come to the largest issue on the agenda. I do not want a 'Big Names' policy! I want the 'Just Wonderful Stories' standard that you have maintained since I first began buying the magazine. (I might be prejudiced since I'm a struggling, and as yet unpublished author.)

To end on a pleasant note (criticism means telling the good as well as the bad), I *do like* Mooney's Module. And, although I don't like *everything* about *IAsfm*, the percentage of good tremendously outweighs the bad. I would also like you to relay to Mr. MacIntyre that *The Martian* was about the most poignant poem I have ever read; and thank you.

As a matter of fact, thank all of you! *IAsfm* is splendid, even with my minor complaints. (Oh, I have

a story going to the editors right now; and I was wondering . . .)

A satisfied customer,

Victor Anderson
Reno, NV

We keep experimenting. If we were to stop doing so, the magazine might well go into a state of stasis and decay. We won't hesitate to change back any particular item, if it seems we have been wrong. But to have the good tremendously outweigh the bad is a very healthy sign, wouldn't you say?

—Isaac Asimov

Dear Dr. Asimov;

In regard to your "big name" policy—I like the "old guard" too

(though I actually believe the *one big name* of your magazine is big enough to keep it going!) but I'm glad indeed that you are also opening your pages to fresh new talent!

The Examination of Ex-Emperor Ming, the short story by Cyn Mason, which appeared in your July 1982 issue, is a delightful experience and I look forward to more of the same. The story is humorous and timely! I predict Cyn Mason will be a *big name*!

Sincerely,

Mrs. M.H. Fox
Tacoma, WA

The more big names there are, the healthier the state of science fiction, so I hope every writer prospers.

—Isaac Asimov

NEXT ISSUE

The February *IASfm* promises to be an especially fun issue. It will feature a short story by Dr. Asimov—"Potential," and will also include "Hardfought," an excellent novella by Greg Bear, as well as a new "Improbable Bestiary" by F. Gwynplaine MacIntyre, and short stories by Robert F. Young, Mary Gentle, Steven Bryan Bieler, and others. Of course you won't want to miss Martin Gardner's encounter with Mephistopheles or Dr. Asimov's Editorial: "More Asimov?" so look for it on sale January 18, 1983.

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HOW TO COUNT WORDS: Name and address must be included in counting the number of words in your ad. Each initial or number counts as 1 word; Mark Holly, 380 Lexington Avenue, New York, New York 10017: 7 WORDS. Zip codes are not counted. Phone #: 2 Words. Symbols used as keys are charged for. City or State count as 1 word each; Garden City, New York: 2 words. Abbreviations such as C.O.D., F.O.B., P.O., U.S.A., 7x10, 35mm count as 1 word. (P.O. Box 145 count as 3 words) Webster's International Unabridged Dictionary will be used as our authority for spelling, compound words, hyphens, abbreviations, etc. Please make checks payable to ISAAC ASIMOV'S MAGAZINE

The holiday hiatus in con(vention)s will soon be over, so this is the time to plan for next year's social weekends with your favorite SF authors, editors, artists and fellow fans. For a longer, later list, an explanation of cons, and a sample of SF folksongs, send me an SASE (addressed, stamped envelope) at 9850 Fairfax Sq. #232, Fairfax VA 22031. (703) 273-6111 is the hot line. If a machine answers, leave your area code and number. I'll call back on my nickel. Send a #10 SASE when writing cons. When calling cons, give your name and reason for calling right away. Look for me at cons behind the Filthy Pierre badge.

JANUARY, 1983

14-16—ChattaCon, For info, write: Box 921, Hixson TN 37343. Or phone (615) 479-8119 or 842-4363 (10 am to 10 pm only, not collect). Con will be held in: Chattanooga TN (if city omitted, same as in at the Read House. Guests will include: Jerry ("A Spaceship for the King") Pournelle, W. A. (Bob) Tucker, R. (Horsecans) Adams, Sharon Webb, Doug Chaffee, Jerry Page.

14-16—PhilCon, Box 8303, Philadelphia PA 19101. C. J. (Faded Sun) Cherryh, artist Carl Lundgren.

14-16—CostumeCon, c/o Fantasy Costumers Guild, Box 1947, Spring Valley CA 92077 Two (count'em) two masquerades (SF/fantasy & historical), banquet fashion show. For costume enthusiasts.

FEBRUARY, 1983

4-6—OmniCon, Box 970308, Miami FL 33197. Long-time fans Bjo Trimble & Dave Kyle, Peter Davison, artist Michael Whelan, Robert ("Mythconceptions") Asprin. A good excuse to go south.

4-6—VikingCon, c/o SF&F Club, W. Wash. U., Bellingham WA 98225. Costumes, cantina, space doings.

11-13—TallyCon, c/o Crusoe, 213 Great Lakes Rd., Tallahassee FL 32301. Gordon R. (Dorsai) Dickson, Kelly & Polly Freas. The second annual edition. Another chance to go south to escape Winter.

18-20—Boskone, c/o NESFA, Box 6, MIT PO, Cambridge MA 02139. The biggest SF con on the East Coast.

18-21—AquaCon, Box 2011, Reseda CA 91335. Los Angeles CA. Jeanne ("Stardance") Robinson, Spider ("Callahan's Crosstime Saloon") Robinson, fan Karen Willson. Another February sunbelt con.

18-21—ConstellationCon, Box 15-805, Cecil Blagg Dr., Victoria BC V9C 3H8 Canada. Damon Knight, Kate Wilhelm, Bjo Trimble, Jerry Pournelle & Larry Niven ("Oath of Fealty"), Syd Mead. No connection with the WorldCon in Baltimore later. At the Empress & Harbor Towers Hotels.

MARCH, 1983

4-6—UpperSouthClave, c/o ConCave, 512 E. 12th, Bowling Green KY 42101. Park City (resort) KY.

11-13—CoastCon, Box 1423, Biloxi MS 39533. A last excuse to flee the Winter by going south.

18-20—LunaCon, Box 149, Brooklyn NY 11204. Hasbrouck Heights NJ (near New York NY). McCaffrey.

SEPTEMBER, 1983

1-5—Constellation, Box 1046, Baltimore MD 21203. John (Zanzibar) Brunner, D. Kyle, Jack (Well of Souls) Chalker. The 1983 WorldCon. Go to smaller cons if you can to prepare. Join in 1982 for \$30 (\$10 to vote on Hugo awards, get publications, etc., without attending). Costs more later.

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